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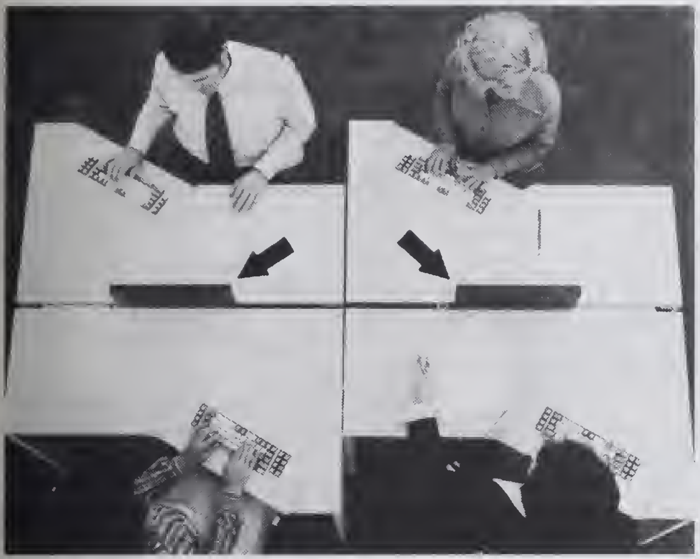
NEWSPAPER



Gas panel displays (arrows) take little room on 3760 stations.

IBM Reconfigures 3790, Enhances 3770 and 3767

By Ronald A. Frank
And Vic Farmer
Of the CW Staff

WHITE PLAINS, N.Y. – IBM has rehashed its 3790 terminal system by introducing a simpler key entry station, the 3760, to make the communications system more competitive. The company also introduced enhancements to the 3770 terminal family and the 3767 printer.

The dual-operator 3760 replaces the 3277 CRT display that served as the key entry unit in earlier versions of the 3790 system. The 3760 includes a gas panel display for each operator position that displays up to 236 characters.

The 3760 comes in two models which are connected to the 3791 controller. The 3791 can handle up to 12, 3760 stations (24 operator positions) simultaneously and the controller provides up to 30M bytes of disk storage.

The disk storage contents can be transmitted in batch mode to a 370 mainframe using Synchronous Data Link Control (SDLC) after data has been entered,

(Continued on Page 2)

IBM Plans Appeal

Catamore Wins $11.4 Million

By Molly Upton
Of the CW Staff

PROVIDENCE, R.I. – After nearly two weeks of deliberation, the jury in the case of IBM vs. Catamore Enterprises, Inc. has awarded Catamore $11.4 million.

Catamore, in turn, was ordered to pay the back rent it owes IBM in the amount of $68,453.23.

The jury did not award any punitive damages, which could be assessed only if it found fraud or gross negligence. However, it cannot be deduced that the jury did not find fraud simply because it did not award punitive damages.

In contrast to a trial by a judge, the jury was under no requirement to detail on a count-by-count basis why it awarded specific amounts.

Cary Reacts

"We think the jury's decision that Catamore must pay the amount it owes IBM is correct. However, we completely disagree with the jury's decision on the counterclaim and we are going to appeal," Frank T. Cary, IBM chairman, said.

Judge Raymond J. Pettine commended the all-male jury for its work, noting this was one of the longest jury cases he had overseen.

Catamore's lead attorney, Thomas K. Christo, said he thinks the case was a "major landmark for the computer field and has at least broken ground to show users they don't have to be victimized.

"We established that an oral agreement can stick and you can get damages on it and that IBM and any other vendor is at least liable for negligence," he said.

"We also established that you can make out a case for fraud," he said, noting the judge allowed the evidence on that charge to go to the jury.

Also, he noted, this was the largest single user's verdict against IBM.

In 1969, Service Bureau Corp., then a subsidiary of IBM, was ordered to pay SM Auto Supply Co., known as Clements Auto, $480,811.33 in damages. Clements alleged SBC misrepresented the capabilities of an inventory control reporting system.

'Almost a Classic Case'

Christo called the Catamore case "almost a classic case of a first-time user right down to the very naive way that first-time users look at things."

In the case, IBM sued Catamore, a jewelry manufacturer, for nonpayment and Catamore countersued, charging breach of contract, breach of warranty, fraud and negligence [CW, July 2].

Catamore's final claim against IBM sought $26 million. Initially the countersuit included antitrust charges, but those were separated.

Catamore, a first-time user with no DP experience or personnel familiar with DP, argued that IBM offered an operational production control system with which Catamore planned to expand its business.

Catamore signed a machine services agreement and alleged IBM agreed orally to furnish the systems engineering support necessary to provide an operational system.

Catamore contended it never received an operational production control system.

The jewelry manufacturer presented damage claims of lost business as well as for expenses incurred in its DP department and loss of customers.

George Jamieson, an accountant for Price Waterhouse & Co., testified on behalf of IBM that Catamore sustained $8 million in loss of customers during the period in question, and Catamore presented a claim of over $3 million in lost profit.

Catamore had claimed $12.5 million in loss of customers stemming from the firm's inability to produce and deliver merchandise ordered because of lack of DP support in the production control area.

DPMA Conference Told

DPer Must Be Businessman First

By Toni Wiseman
Of the CW Staff

ATLANTA – "We are businessmen first and data processors second. We're responsible and have to account for the money we spend, therefore we have to run our DP department like a business," Martin Pater told attendees at the Data Processing Management Association (DPMA) conference, Info/Expo '75, held here last week.

Pater, manager of DP operations for Beneficial Standard Life Insurance Co., said it is possible for a small- to medium-size installation to operate even on a limited budget if it is willing to live by certain rules and take measures to ensure business-like procedures.

The first step is to plan for the future, he said. "If you're in data processing, you know you're going to grow and new equipment is going to appear; this is something you have to take into account far down the line."

Standardization of procedures is also an essential step, he said, noting this step began eight years ago at Beneficial and it took Beneficial four years to get to the point where "anyone at anytime knew what he was doing."

The next step is to get together with the forms design department. The operations department has to be in on every new design to ensure standardized formatting of data entry, Pater said.

Next, power steps must be established and enforced. "You have to be hard-nosed," Pater said. "If a job's cutoff time is 2 p.m., it is not 2:01 or 2:05. Establish firm cutoffs with some hedge only for emergencies."

Finally, and most important, the DP shop should be run like a business, he advised session attendees.

Info/Expo '75 coverage continues on Pages 6 and 7.

To illustrate his points, Pater noted some of the savings he had been able to realize in the operations department at Beneficial.

The first thing he did was fight for decent salaries, he said, noting "You get what you pay for." A hike in pay brought in more qualified personnel, increasing the average keystroking from 10,000 stroke/hour to between

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Judge Nixes IBM Request For Commerce Census Data

By Edith Holmes
Of the CW Staff

NEW YORK – Judge David N. Edelstein of the U.S. District Court here has rejected IBM's request for the Department of Commerce census data on corporations participating in the computer industry.

IBM had hoped to obtain this market information for use in the antitrust suit being brought against it by the government.

The court's denial of the IBM motion that raw census data be required and obtained from the Commerce Department came just a week before the court recessed on July 3 for the long July 4 weekend.

The addition of this source of market information, collected for statistical purposes only and so protected by statute from use as evidence in lawsuits and similar actions, was not sufficiently compelling to violate the data's position of confidentiality, the judge said in his opinion.

IBM counsel argued it needed the Commerce Department information for comparison with the production and shipment figures given by the executive officers of key companies in their testimony in this case.

In addition, IBM maintained the Commerce Department employed a different definition of the market involved than that defined by the Department of Justice in its case.

Referring to "the strong public

(Continued on Page 3)

DataComm User Joins CW

NEWTON, Mass. – *The Data Communications User* magazine has been acquired by DataComm User, Inc., a subsidiary of Computerworld, Inc., which publishes *Computerworld*, operates the Computer Caravans and is part of the corporate family that includes International Data Corp.

The staff of *The Data Communications User* and its annual handbook and industry directory, "The DataComm Planner," will remain the same. Dr. William A. Saxton, president of DataComm User, Inc., will continue as publisher while Morris Edwards will continue as editor.

National sales manager Silvio Mandino and regional sales managers Shaun Bresnahan and Richard L. Green will maintain their responsibilities.

It has been announced that

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IBM Refashions 3790 System, Enhances 3770

(Continued from Page 1)

edited and corrected from the 3760 key entry stations.

The 3760 can reduce the number of keystrokes through automatic functions which assist the key entry operation, IBM said. Keying errors can be corrected by backspacing and rekeying. If an error has been made in a source document, the record can be flagged for future attention. Error messages are flashed on the display panel.

As was previously possible, the 3791 can be linked by cable to the byte multiplexer channel of a virtual storage 370 mainframe or it can transmit data in an environment that includes the Virtual Telecommunications Access Method (Vtam).

A Batch Transfer Program has been added to provide system control programming and acts as an interface betweeen the mainframe and the 3790 system. The Batch Transfer Program controls the flow of data from the 3791 to either disk or tape storage, a printer or the CPU's operator console. The program is available at no cost.

Original versions of the 3790 were software-dependent on the 370 for program validation and other system software functions. With the 3760-based 3790 system, however, there is "no loading of software required from the mainframe," an IBM spokesman said.

The 3760 key entry terminals were designed primarily for high-volume data entry functions requiring a large number of stations at one location. But it can also be used for decentralized applications where one or a few units are located in various user departments. A 3760 can operate up to 2,000 feet from a 3791 controller.

Both the Model 1 and 2 perform the same functions but a Model 1 must be the first unit in a string of 3760s. Up to eight Model 1s can be supported by a 3791.

The 3760 is available under the IBM 24-month Extended Term Plan (ETP) at a cost of $220/mo for the Model 1 and $120/mo for the Model 2. Charges under the standard IBM rental plan are $258/mo for the Model 1 and $141/mo for the Model 2. Purchase prices are $9,240 for the Model 1 and $5,040 for the Model 2.

A typical installation of nine 3760s and a 3791 controller would be $2,608/mo under ETP and $3,063 under the monthly rental. Purchase price for this system is $108,880.

First deliveries of the 3760 are scheduled for the fourth quarter of 1975.

User-Programmable Terminals

IBM also announced the 3773, 3774 and 3775 terminals can now be programmed by users to expand the terminals' capability.

These programs allow for checking the accuracy of keyed data, performing arithmetic operations, handling format and edit operations and controlling paper forms in the printer, the company said.

Storage available for processing programs ranges from 4K to 12K bytes in the 3774 and 6K to 20K bytes in the 3774 and 3775.

The 3774 and 3775 are equipped with a 99K-byte "standard nonremovable diskette" for data and program storage, IBM said. Applications programs are loaded from the central computer.

An optional 480-character gas panel is available with the 3774 and 3775 for $94/mo.

Higher Print Speeds

Maximum print speed on the 3767, 3771, 3773, 3774 and 3776 is now 120 char./sec compared with the older speed of 80 char./sec.

On the 3776, the print speed has been increased to 400 line/min from 300 line/min. These printer units will be available in the first quarter of next year.

The 3773 with 120 char./sec printer costs $448/mo under the monthly rental; the programmable model is priced at $507/mo. A 3774 programmable model is $583/mo; a 3775 programmable model is $845/mo.

The programmable terminals will be available in the second quarter of 1976.

Two computer programs – Telecommunications Control System – Advanced Function (TCS-AF) and Telecommunications Access Method – Information Management System/Virtual Storage (Tcam-IMS/VS) interface – are said to offer improved flexibility in moving data between terminals and systems.

In a multisystem installation, for example, the networking capability of TCS-AF allows a terminal or applications on a computer to communicate with other terminals or application programs on other computers also using the program.

The Tcam-IMS/VS interface permits a terminal to be linked through Tcam with the data base processing capabilities of IMS/VS as well as other Tcam application programs, IBM said.

TCS-AF is scheduled to be available in December for $1,250/mo for users of OS/VS1 Release 3 and OS/VS2 Release 1.7. Tcam-IMS/VS is scheduled to be available this month for $500/mo for the same users.

IBM Cuts CPU, Peripheral Prices

WHITE PLAINS, N.Y. – Citing product pricing strategy as its prime motivation, IBM last week chopped purchase-only prices on two System 370 CPUs and an assortment of peripherals.

Cuts of 15% were made on the 370/115 and 125 CPUs; the 3275 and 3277 displays for the 3270 communications system; 2740 terminals; 1050 data collection units; and the 2790 series of terminals.

IBM also dropped purchase prices by 10% on its 3410 and 3420 tape drive systems; 2319, 2305, 3330 and 3340 disk drive systems; 3203 and 3211 printers; and the 1287, 1288, 3881 and 3886 optical and mark recognition units.

IBM said it "routinely reviews its product pricing in light of many continually changing business factors. We feel that a decrease in purchase prices for this equipment is appropriate."

While the company gave no further information on why the prices were dropped at this time, one industry observer thought the price drops were taken to improve the firm's cash flow position.

DataComm Enlarges CW Family

(Continued from Page 1)

The Data Communications User will sponsor a national conference and exposition in 1976 with Saxton serving as conference chairman and Edwards serving as program chairman. Called DataComm/76, the show will be held at the Rivergate Convention Center in New Orleans Feb. 16-18.

Acquisition of the magazine and the show were described as a "perfect complement to Computerworld's interests" by Patrick J. McGovern, chairman of Computerworld, Inc. and will make it possible to accelerate both companies' involvement in data communications, he said.

Saxton said there would be no immediate changes in the editorial direction or format of *The Data Communications User*. New offices for the magazine are at 60 Austin St., 02160.

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U.S. Enters Market Definition Documents in IBM Case

By Edith Holmes
Of the CW Staff

NEW YORK – A fly droning its way through the courtroom here recently provided a major diversion as the U.S. Government identified and described some 63 documents dealing with market definition in its antitrust suit against IBM.

The only other interruption in this laborious procedure came from the judge, who commented on the "untidy and awkward" way the government has chosen to enter into evidence related document and deposition testimony.

The Justice Department took three days of trial to mark and explain those internal IBM documents it plans to use to prove its market definition portion of the case.

Deposition testimony from IBM executives that deals with this same subject area has been entered into the record on numerous separate occasions.

In those instances where these two forms of testimony deal with the same event or are interdependent in some other way, the current record in the case makes that relationship confused at best, observers said.

Memos and Reports

The documents themselves range in time from the early '60s to the early '70s. In most cases, they are memos or reports dealing with market share, future product strategy, percentages of leased and purchased peripheral equipment, long-term competitive plans, competitive strength broken down according to systems class, the pros and cons of outright sales and rental arrangements and selective pricing in areas such as the Federal Government marketplace.

IBM counsel has objected to the use of all but two of the total 63, and the judge has overruled these objections until such time as IBM's attorneys explain them in writing and government counsel is able to reply.

IBM's objections include charges of hearsay, charges that those authoring the documents are often not managing agents for the corporation and charges that a proper foundation for their entry into evidence has not been laid by the government.

While the record may resemble an unassembled jigsaw puzzle, Judge David N. Edelstein made it clear in a private conference with the lead attorneys for both sides he will consider only those pieces entered into evidence with the proper foundation and some indication of the weight to be given them.

Speaking in particular to Raymond Carlson, lead counsel for the Justice Department, the court said, "I would suggest you revise your experience to accommodate my views and my thinking, on both the kind of foundation I think is necessary to give a document some evidentiary quality and for me to be able to give it some degree of weight."

Edelstein suggested Carlson would receive "the most awful shock of [his] life when, at the conclusion of the trial, the court dealt only with that evidence which had been shown to be reliable.

He cautioned Carlson to remember that not every piece of paper used by a business and kept in its files 'qualifies as evidence in a case such as this.

"I don't have to go into these discussions with you. I can just sit back and rock in my chair . . . I can say to both of you, 'Have your fun. Put everything in the record and at the conclusion of the case, I'll deal with it.' "

Judge Nixes IBM Bid For Commerce Census

(Continued from Page 1)

interest in the confidentiality" of this census data, however, the court concluded IBM's plea did not outweigh that concern. The privacy of members of the public who are required by law to submit often confidential data to the Commerce Department must be protected, he indicated.

Edelstein added that the statute protecting this information applies to the government's attorneys as well as to those of IBM. The Justice Department hasn't based its case on the data collected by the Department of Commerce and so has not obtained an unfair advantage, he said.

Motion to Quash

Following the judge's ruling, the Department of Commerce declared it would not produce the specific material on the Sperry Rand Corp. subpoenaed by IBM on June 18.

The motion to quash this subpoena was renewed by counsel for the department on the grounds "nothing has developed in this lawsuit that would cause the census documents to be provided in an exception to the confidentiality law."

The Commerce Department motion had been temporarily set aside when the Justice Department and IBM sat down together to outline precisely what information the corporation was seeking with regard to Sperry Rand.

Summer Recess Expected

IBM had subpoenaed the information on Sperry specifically for its cross-examination of Robert E. McDonald, president of the company and a witness for the government.

The motion to quash remained on the judge's desk, however, and IBM counsel proceeded to question McDonald last week without the additional raw census figures on Sperry.

The court is expected to recess soon until sometime in September. During the court's recess, both IBM and the government are expected to complete additional discovery in the case.

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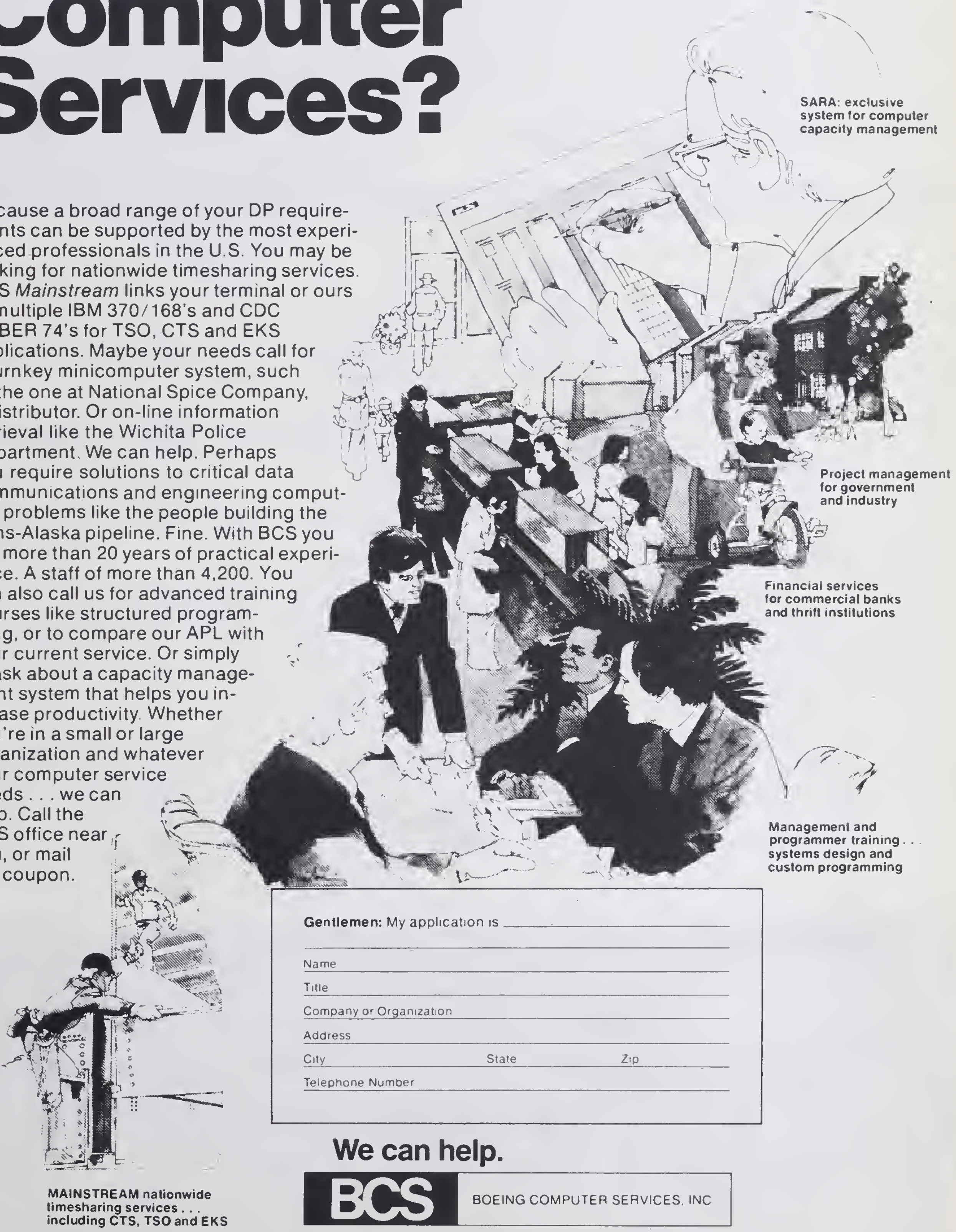

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Although Support Reluctant

State Users Approve FBI Message-Switching System

By Nancy French
Of the CW Staff

KANSAS CITY, Mo. – Representatives of state law enforcement agencies gave reluctant support here recently to a modified version of an FBI-controlled message-switching system that would speed communications on wanted persons, stolen property and various administrative functions between the states themselves and between state and federal information systems.

If adopted, the FBI's highly controversial message-switching system [CW, Nov. 17] would require state law enforcement agencies to transmit all messages to other states through FBI-controlled, computerized switching equipment in Washington, D.C., rather than through the National Law Enforcement Telecommunications System (NLETS) which the states presently operate for that purpose.

The National Crime Information Center (NCIC) is the FBI's repository for records on wanted persons, stolen guns, autos, boats and the like, as well as some computerized criminal history records.

At the conference here, a joint committee of the FBI's NCIC Advisory Policy Board and the NLETS Board of Directors, representing potential state-level user agencies, approved FBI control of two types of message switching and modified and then accepted two others.

Original Proposal

The original proposal would have placed the FBI in control of four types of communications:

- Messages transmitted to the files of the NCIC and NCIC responses.
- Messages retransmitted to or from NLETS terminals at NLETS' request.
- Criminal justice agency messages transmitted, received and responded to which relate to NCIC data initially received as a result of a message transmitted to NCIC files.
- Messages transmitted to or from NCIC or NCIC participants relating to management, operations, administration and development of the NCIC system, including its communications network, new applications, systems security, technical NCIC considerations or problems.

The conference committee approved with little debate the first two message types as basically inquiry transactions that are common practice today.

However, committee members balked at the last two message types, which concerned local follow-up of NCIC-related matters and free text transmissions.

Here, the committee limited its approval of FBI switching to formatted confirmations of hits on NCIC files and computerized criminal history (CCH) inquiries and responses.

The committee also agreed to accept FBI switching of formatted criminal history inquiries and manual responses and, finally, switching of formatted messages with "minimum free text" for supplemental criminal history record information.

FBI's participation in switching free text messages relating to management and operation matters called for in the fourth message type was limited to the following:

- NCIC-related management and operational messages transmitted from NCIC control terminal agencies to NCIC.
- NCIC-related management and operational messages transmitted from NCIC to NCIC control terminal agencies.
- NCIC-related management and operational messages transmitted from NCIC control terminal agencies to NCIC control terminal agencies.
- Automatic notifications informing an originating agency that a "hit" had been made on one of its records.

Difficult to Express Opinions

Critics who attended the meeting said privately it was difficult to express their feelings and opinions on the FBI proposal frankly with the "intimidating FBI tape recording machines" and FBI top brass, including Director Clarence Kelley, advocating the system.

Secondly, the joint NCIC Advisory Policy Board/NLETS Board of Directors meeting posed problems of "office politics for a number of attendees. NLETS representatives with one view were pitted against NCIC Policy Advisory Board members who are their bosses in state law enforcement agencies.

"How can you sit across the table from your boss and disagree with him at a public meeting?" one attendee asked.

While this apparent state support bolsters the FBI's case for central control of message switching, such decisions are not the responsibility of state officials, but rather those of the Attorney General and the President of the U.S., and many federal issues will have to be resolved before they can act, a federal official who asked not to be identified pointed out.

Committees in both the Senate and the House of Representatives are expected to take up the issue of state and federal roles in law enforcement activities as well as transmission and other uses of criminal history records at hearings scheduled later this month.

Overheating, Software Blamed

Technical Snafus Delay Boston School Assignments

By Patrick Ward
Of the CW Staff

BOSTON – Technical problems with computerized student scheduling, including what the local press called an "overheated computer," led a U.S. court judge here to grant the Boston School Committee extra time to prepare desegregation school assignments for next fall.

The school department, under court order to carry out the court's plan to desegregate city schools, had to ask U.S. District Court Judge W. Arthur Garrity for an added two or three weeks to process the school assignments. The assignments had been originally scheduled for mailing June 25.

Software Problems

Despite the reports of overheating, software problems seemed to be the cause of the school department's problems. However, the school department DP staff would not go into detail on the subject.

Garrity has told the DPers and other school department workers to keep information about the assignment process confidential until the assignments have been mailed to parents.

The widely-reported overheating problem developed when the school department began running its IBM 370/125 system three shifts daily to handle its rising workload, James Dailey, DP director, said.

"When we ran a two-shift operation and then shut down, the air conditioning would have all night to bring us down to a real safe temperature level," he explained. "The heat would gradually build up during the day, but the third shift hiatus would let the room cool down again."

The CPU powered down once, and the DP shop installed more air conditioning capacity the next day, Dailey said.

DPMA Told DPer's First Priority Must Be Business

(Continued from Page 1)

16,000- and 20,000 stroke/hour.

"And the turnover in personnel is down to a negligible number," he added.

"Don't be afraid to fight politics, especially when you're right," he said.

In 1971, a subsidiary moved from St. Louis to the West Coast, bringing its own computer. It used the IBM 360/30 about four hours a day, he said.

After he convinced management to consolidate the DP activities of the two installations, the company was able to save $220,000 in four years, he said, at the same time doing more work more efficiently since both systems were running the same jobs.

Time to Spare

In 1973, Beneficial was running a 360/40 24 hours a day, seven days a week. It was limited by core capacity and hampered by poor turnaround, he said.

An analysis showed the company could get a 370/145 for about the same amount. "This allowed us to get rid of our 360/30 and our 360/40 – and we had time to spare," he said.

This time did not go to waste, however, since Pater convinced management to allow him to sell it to outside users. This brought in revenues of $19,000 in 1968, $24,000 in 1969 and $70,000 last year, he said.

While Beneficial is an IBM shop today, Pater noted that before the installation of the 145 the company saved $36,000 annually by using non-IBM peripherals. Today, it saves $10,000 monthly by having a third-party lease.

"I run my department as a cost center. Everything is billed to the user department and we charge for a profit," Pater said.

"Our job is to make operations work. If you are going to use a computer, don't misuse it. Your job as a businessman is to bring money in, not spend it on excess hardware capacity."

The audience noted that his system must work, since Pater's budget for 1975 was $1.4 million, of which $850,000 was operational expenses. In 1970 the budget was $1.2 million with $800,000 for operations.

Correction

In the chronology of events presented in the Catamore case [CW, July 2], a 16K 360/20 was ordered in May 1969 and an order entry and merchandise control system was delivered in June 1970.

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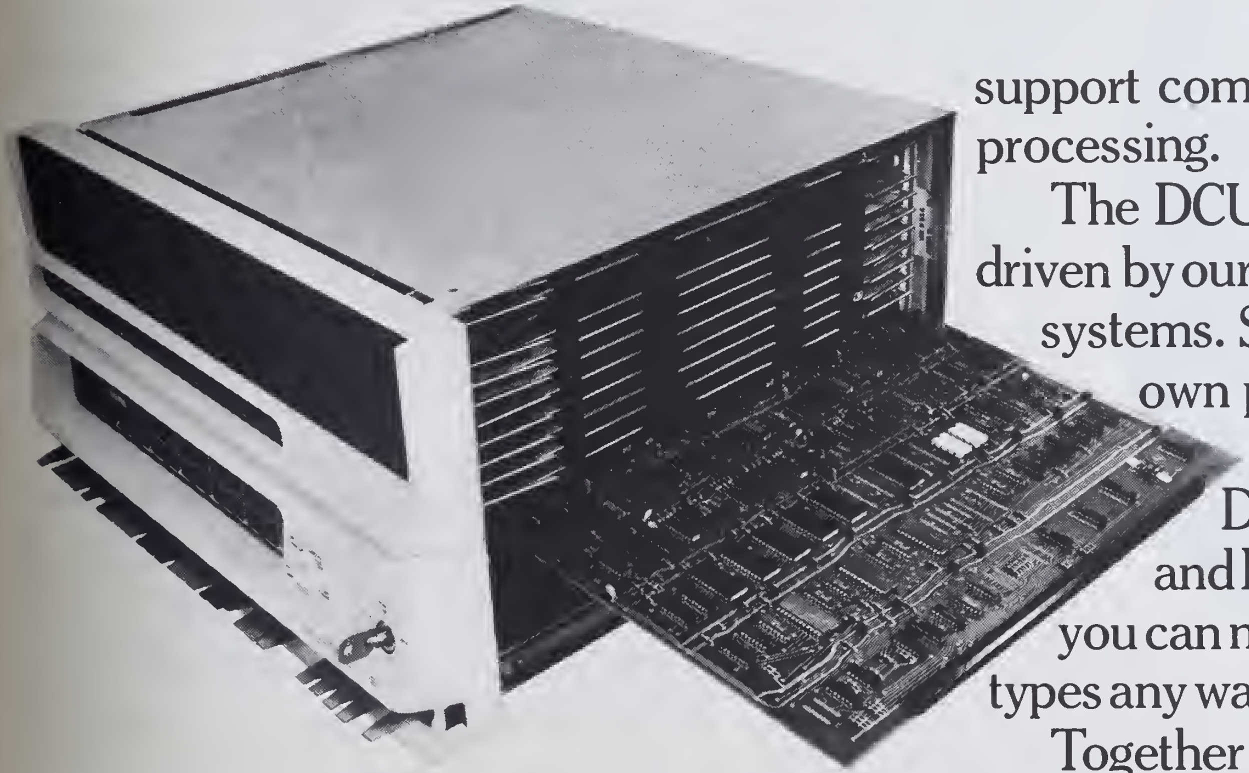

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Need for Training Seen

Few Managers Fulfill Role Well

By E. Drake Lundell Jr.
Of the CW Staff

ATLANTA – Few DP managers fulfill their roles as line managers well, even though it is the most important role they have, George Glaser, outgoing president of the American Federation of Information Processing Societies (Afips), said here last week.

Largely this is because "few DP managers have been trained to manage," Glaser told the luncheon crowd during the Data Processing Management Association's (DPMA) annual conference, Info/Expo '75.

"Many have risen to this position from a background in which the lion's share of their time and energy has been devoted to keeping abreast of technology, and the unrelenting pace of technological developments will continue to impose this burden even though they may no longer function in a strictly technical role," he said.

As a result, he added, "DP managers have had relatively little opportunity to acquire the skills considered basic to general management."

But, while management training is needed in the field, it is not the only answer, according to Glaser, since "not all those who have been exposed to management training have acquired that precious commodity that distinguishes between the form and substance of effective management."

DP managers have to also have the will to manage, he said, calling this the determination to manage by "taking steps to control their business instead of letting it control them."

To do this, the DP manager must be willing to set objectives; plan strategy; establish goals; develop a philosophy; establish policies to carry it out; set an organizational structure; provide personnel, procedures and facilities; set standards; establish management programs and operating plans; provide control information; and activate people.

CW at Info/Expo

"Each of these requires skill, hard work and the will to manage," Glaser said, adding that this determination is "the very stuff good managers are made of."

Those who scoff at such a list of management objectives "may only be rationalizing their own reluctance (or unwillingness) to accept their responsibilities as a manager – or perhaps their inability to carry them out."

At the same time the DP manager has to function in a line management position, he also has to be an agent of change in most organizations, Glaser indicated.

"In this role, the DP manager functions as the technological innovator – with all the burdens and hazards that role implies," Glaser said.

"Let's face it, not all organizations have an appetite for change and, ironic as this may seem, few technical personnel are effective spokesmen for change; most find it distasteful because of the conflict that invariably accompanies it," Glaser said.

Bringing the two roles of the DP manager together, Glaser said, "the managerial and personal skills required to effect technological change are quite similar to those needed to bring about changes in the way people manage."

At the same time, Glaser said that "managerial change is tough to bring about, whether through a new information system or from the introduction of a formal planning discipline.

"Both require sensitivity to individual attitudes, behavior and motivation; both require training of those affected by the change and those who affect it; both require patience and perseverance; and both require conviction that the innovation is important and beneficial."

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Glaser Recommends Action to Up Quality, Number in Manpower Pool

ATLANTA – "I am underwhelmed at the progress that has been made" in increasing the available pool of trained manpower in the data processing community, George Glaser, outgoing American Federation of Information Processing Societies (Afips) president said here last week.

He reminded a luncheon group at the Data Processing Management Association's (DPMA) annual convention, Info/Expo '75, here that he had called for action in this area over a year ago in a keynote address to the National Computer Conference.

First, "there are a distressingly large number of poorly qualified people at all levels, particularly in user development organizations."

Secondly, "those who are not competent are becoming less so every day as technological developments continue at an overwhelming rate."

Next, "long-term career prospects in DP for DP people in most user organizations are not sufficiently promising to attract the talented young men and women who could add to and strengthen the supply."

Finally, he added, "we have not achieved the level of professional maturity necessary to stimulate and reward the continued self-renewal of individual competence," and, at the same time, "our universities are turning out too few computer-oriented problem solvers."

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Grosch Urges Cooperation Among Societies

By Catherine Arnst
Of the CW Staff

ATLANTA – DP societies must cooperate with each other more closely, with the technical and nontechnical organizations finding a common ground for communication.

These were the views expressed by Dr. H.R.J. Grosch, editorial director of *Computerworld* and vice-president of the Association for Computing Machinery (ACM) at the annual conference of the Data Processing Management Association (DPMA). Grosch was the keynote speaker at the DPMA conference here last week called Info/Expo '75.

The technically oriented societies such as ACM and the more practically oriented organizations like DPMA "don't work together enough; the ways we tend to communicate within the American Federation of Information Processing Societies (Afips) tend to be limited in number," he said. "I would like to see these methods of working together strengthened."

Grosch would like to see DPMA move its entire membership toward the more technical side and the technical societies move toward solving human and management problems, to facilitate communications.

He cited virtual storage as an example of the lack of communications between Afips member organizations. "It would have been interesting to see what would have happened if the idea had been resisted. The technical people knew it wouldn't work, but how do they tell people?" he asked.

CW at Info/Expo

Grosch especially criticized DPMA's *Journal of Data Management*, which he said is "dull. It ties you together, but it could be more useful and more popular if it were better edited and less refereed."

He proposed a joint publication among all the member societies of Afips, suggesting DPMA could cooperate with the other societies on reviewing business articles. These could then be organized into an archival-type publication.

Another proposal he submitted for strengthening communications would be greater utilization of lecture programs so users would hear more about "new, hopefully practical, technical advancements.

"It's hard enough to keep up when information floods into you; it's impossible when you're isolated," he said.

Social good will or "bonhomie," was also stressed by Grosch to move societies closer together. "The social thing is good glue to stick together people," he said. But, he added there are "adhesives other than liquor, door prizes and dances."

Grosch concluded his speech by stressing the forces of change that are rapidly changing DP. "We must learn to handle that change as well as steer it."

"We've been through an enormous amount of exciting changes to get where we are, but we must not stop.

DPMA must accept the challenge of continuing change."

Simplicity Stressed in DP Cost Structure

By a CW Staff Writer

ATLANTA – When developing a cost structure for charging for DP services, the plan must be kept fair, equitable and simple enough for the user to understand, according to Sam A. Alward, vice-president of Seaboard Coastline and L&N Railroad.

Alward made his remarks at Expo '75 here last week. Along with the question of how to charge he said, a corollary question must be whether to charge.

"If computer resources are used for a service, this service should cost little enough afterwards to justify using a computer," he said. "The reason for using computers is to economize."

Charging for computer services can cause friction with users, Alward said, if not explained properly. An important step is to make an early estimate to determine whether costs will exceed a user's expectations of savings.

Alward's company uses a system management function (SMF) system to determine user costs. Costs are broken down by department and subdepartment for the user along with the subtotal and total costs of each item.

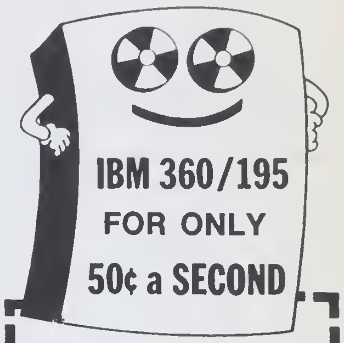
A base figure is then derived by determining the total hardware complement and then adding overhead items (hardware costs make up 55% of this figure). This figure is divided into the rate per unit of time.

A uniform time report is prepared, with the amount of productive time spent on each activity entered daily. This produces a systems management report.

To determine the value of the technical hours spent, the total salary is divided by the number of technical hours used. "Productive time is the critical entry," Alward said.

A programmer hour is estimated at $12 to $13, he said, with no overtime paid. Consequently, when the programmer works overtime, the user's cost is cheaper.

However, if part of a programmer's time during a particular month is spent in training, the user's cost will be higher.



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Editorials

What's Good for the Goose . . .

The IBM antitrust case has been operating under a gag rule instituted at the request of the company. This ruling forbids both IBM and the Justice Department from commenting on the case as it progresses.

But several instances have come to light in which IBM has violated the ruling, including comments made by Chairman Frank T. Cary and information sent to stockholders.

IBM attorneys have brushed aside these apparent violations by pointing out the company somehow has a unique responsibility to keep its stockholders informed of the IBM position. In fact, Thomas D. Barr, lead IBM attorney, told Judge David. N. Edelstein IBM has a right to keep its stockholders informed since, presumably, their investments are affected [CW, July 2].

Barr contrasted this corporate obligation with that owed to mere general citizens. He said the stockholders "stand on a different footing."

Barr's concern for the interests of the IBM stockholders is touching. But he did not quite convince anyone the general public, and especially the U.S. taxpayer, should be kept in the dark about this trial.

All too often in antitrust proceedings, the pompous corporate attitude that a company can do no wrong floats to the surface. Barr should remember the Justice Department represents the interests of all our citizens. And they have a stake in the survival of the American business system that is definitely as great as that of any IBM stockholder.

It was IBM that asked for the gag rule in the first place. There is no such thing as half a gag. Either no one receives information or everyone receives it.

Barr had better make up his mind.

Elephant Hunting

It's fine to go elephant hunting, but foolhardy to undertake this task with a handgun.

Yet this seems to be the approach of the Antitrust Division of the Department of Justice these days in its attempts to tackle ITT, IBM and AT&T all at once. That the department, let alone its division, seems to lack the wherewithal to bring these companies firmly – and so fairly – to trial seems all too apparent in U.S. vs. IBM.

In presenting its view of the definition of market involved in the case, for example, the government has separated deposition testimony from supporting documents.

Segments from the depositions of IBM officials on the market definition aspects of the case have been read into the record. Some 63 documents from IBM's internal files also have been entered into evidence.

In several instances, the testimony discussed the documents in evidence, and the documents were authored or could have been identified by those officials deposed. Yet depositions and documents were not organized and presented to the court in such a way as to make their relationships unquestionably clear.

Frustrated by what he called the "untidy and awkward" way in which the government has chosen to handle this material, Judge David N. Edelstein has warned the Justice Department, and IBM counsel as well, that he need not consider any evidence for which a proper foundation and reliability has not been established.

Observers indicate the government team has not had the resources to adequately organize the quantities of information it has amassed over the last six years and plans to use in the trial.

But such explanations provide no excuse if the government seriously hopes to air the many economic and legal questions involved in this case.

'In 60 Days You'll Be the First to Know.'

Letters to the Editor

Grosch Assumptions Erroneous; NCR Maintaining Its Viability

Herb Grosch, in his June 25 column, asserted NCR Corp. has "disappeared" as a mainframe manufacturer and has withdrawn "to the point-of-sale and cash register business."

It is incredible that even a self-appointed industry oracle can be so wrong with such consistency. Where has Grosch been spending his time? I can only assume it has not been in the real world of the marketplace. According to International Data Corp. figures, NCR's user base now exceeds 6% of the business DP systems installed worldwide.

Grosch stated that, in 1971, he predicted NCR's "disappearance" would occur in 1973. He is too modest. In actual fact he has been forecasting NCR's imminent demise as a mainframer for more than a decade, starting in the early 1960s. Can it be that he is stubbornly inflexible? The evidence suggests this, as does his habitual identification of our company as "National Cash," a term which dates back to the Univac I era.

Let me state for the record that Grosch's assumptions about NCR's future plans and strategy were totally erroneous, including his suggestion that major new-generation computer systems are not being developed and will not be marketed by our company.

I should also like to make a prediction of my own: NCR will be in the mainframe business long after Grosch's column has disappeared from the pages of *Computerworld*.

William S. Anderson
Chairman and President

NCR Corp.
Dayton, Ohio

Did Grosch Miss His Calling?

After reading Herb Grosch's June 25 column, I suddenly realized I had greatly underestimated him.

Until then, I had thought of him as a pleasant old duffer whose sole function seemed to be winging away to endless conventions, drinking with old buddies, worrying about which association DPers should join and reminiscing about the "good old days."

Now I discover he has a frightening new power. By a mere stroke of his pen, in order to justify his earlier predictions, he has removed NCR and Xerox from the computer business. Even though they both are still announcing new products, servicing their existing bases and seeking new customers, they have, as he puts it, "disappeared."

How clever! How wonderful! Imagine being able to justify any earlier utterance by ignoring existing facts. Grosch obviously missed his calling in life. He should have been a politician.

Jim Buren

Houston, Texas

Cal Tech Students No Robin Hoods

Computerworld's editorial, "Hard Look in the Mirror" [CW, June 25] was silly. Those students at Cal Tech were not Robin Hoods – even CW's rather biased article made it clear their original design was strictly for their own profit. "Harmless ripoff" is a dangerous contradiction in terms. "Nobody got hurt"? McDonald's did, probably for as much as $20,000 (considering administrative expenses).

What CW really said was that ripping off is okay – as long as the "big company" is the ripee, and especially if you can "beat the system" – that's fun.

There are indeed a number of serious issues confronting us both as members of the DP community and as members of society at large.

Ethics is one of the most important of these issues. Ethics deals with behavior patterns as they pertain to a distinguishable group, and in particular as those behavior patterns tend to influence positively the survival of that group.

I feel the McDonald's caper was unethical both in terms of DP ethics and in terms of whole-society ethics.

L.F. Wygant

Chicago, Ill.

Antistudent Prejudice Showing

I read with some dismay the letter from L.F. Wygant [CW, June 25] complaining about the Cal Tech students vs. McDonald's contest.

As I remember the story, it clearly stated the prizes were given to charitable organizations. I believe the story also said the students purchased their own computer time, but I may have read that in another account. As I recall, the dollar amount was in excess of $100.

My distress with Wygant is that he reached exactly the opposite conclusions. I suspect his prejudice against students was showing. As implied in the editorial in the same issue, I believe he engaged in a prank or two while in school, or at least used some of his computer time to play games.

Given the way Wygant reads newspaper stories, I would hesitate to give him a set of system specifications. I am afraid the programs produced would do exactly the opposite of what I had specified.

David Tanner

Ann Arbor, Mich.

(Other letters on Page 10.)

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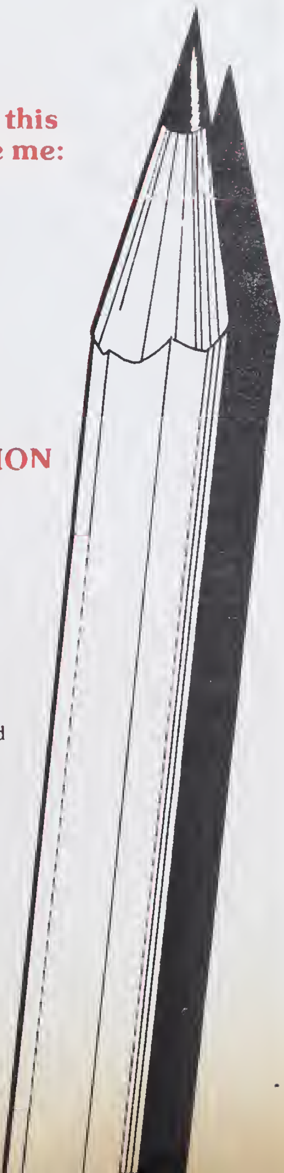

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Checkup Time III

Since I predicted its 1975 disappearance back at SYSTEM 71, Compagnie Internationale d'Informatique (CII) has continued to be the flagship of French national computer pride. With Siemens and Philips, it founded Unidata to offer a (somewhat compatible) spectrum of European mainframes. And it soaked up hundreds of millions of dollars in government contributions. The lower profile of de Gaullism, the world economic slump and the domination of the joint venture by Siemens all took their toll, however. In an on-again, off-again, curiously convoluted deal, CII recently bought control of Honeywell Bull. What this means for Honeywell I will speculate about later; for CII, it means a stronger influence in still-moribund Unidata, but on such terms financially and otherwise that the CII chief executive resigned in protest.

Is it fair to say that CII has disappeared? No, unless by applying the touchstone of major new development one equally says it never really appeared in the first place. CII exists, with steady transfusions from Plan Calcul and other government agencies. But the new Bull blood will hurt it, not help it. Both CII and Unidata will "dissolve; and like this insubstantial pageant faded, leave not a rack behind." It would be fair to say, I believe, that Honeywell was also hurt; both CII and Honeywell sort of partly disappeared – became more transparent – instead of one losing and one gaining, as in the earlier General Electric/Honeywell deal.

We now pass from the present into the future. In 1976, I said, Oki/Mitsubishi would disappear "or earlier, merge with Nippon Electric/Toshiba if forced by the ministry." In spite of recent new product announcements, I'm inclined to think that Oki/Mitsubishi has really dropped behind as a major factor in Japan. Won't claim it has disappeared, in view of its small but not negligible share of the huge Japanese home market – but explicit change in 1976 looks likely.

I also said Digital Equipment Corp. would be killed off in 1976 "unless they give up the current DEC-10 challenge to IBM and stick to minis." I continue to believe this very strongly, but Digital successes in the foreign mini market, which it dominates, clearly puts off the evil day of open IBM competition and DEC hazard for half a generation. IBM will be too busy in neo-FS 1976 to bother crushing relatively miniscule DEC. Of course, if IBM *should* put off major announcement next spring, it might well bring out a true mini, and hurt DEC badly, as System/32 has hurt Burroughs and National Cash, and Nixdorf and Olivetti later. But on balance, I look for DEC to prosper until at least 1979.

I had no candidates for merger or dissolution or obfuscation in 1977. It seemed to me in 1971, and still seems to me today, that 1977 will be the year when seriousness of the IBM fifth generation announcement and initial deliveries will be assessed, and the enormous costs of staying in the ball game will become evident to the competition.

In 1978, the game will intensify –the multibillion dollar game of musical chairs will speed up. At least two of the four survivors will have to retrench or merge – or vanish.

Herb Grosch

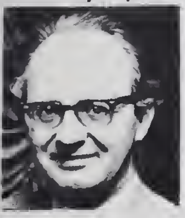
In BankAmericard Account Numbers

Customer Inconvenience Result of System 'Hot Spots'

The Taylor Report

By

Alan Taylor, CDP



The request Michigan BankAmericard received from Suresh Bazaj was a reasonable one. It was simply that his billing date be changed from the seventh of the month to around the 27th. Billing dates of the seventh caused dates of the 32nd due which, for people paid on the last day of the month, are certainly inconvenient.

Michigan BankAmericard never denied it would be more convenient for its customer to have such a billing date. Its system, in fact, does have billing cycles that start respectively on the 25th and the 28th of each month, so there was no problem there.

However, Bazaj did not get his wish because his account number determined the dates of both billing and payment due. And so, wrote Michigan BankAmericard, Bazaj's account number "is unalterable."

Translating this into English, Michigan BankAmericard is trying to cut corners by using one number for two independent purposes – identification and billing date.

The price for such false economy, however, doesn't fall on it, but directly on its customers, which seems unfair.

More importantly, it also falls on the whole computer industry, because what Bazaj sees happening to him and to others is "another example of the inhuman, mighty computer." He asked me both for my reaction and whether I have met other similar systems.

The Account Number

The account number in question consists of 13 digits, four identifying the issuing bank (in this case, the Michigan National Bank); one identifying the office where the number was issued (in this case, Southfield, Mich.). One of the remaining eight digits is used to determine the billing cycle.

The 13-digit number was not a length selected by Michigan BankAmericard, but was part of the contract under which the Michigan National Bank joined the BankAmericard system. The various digits are reserved for "future" possible uses, planned for implementation up to the year 1990.

The requirement that account numbers be unalterable, while accurate, is misleading as an answer to Bazaj's request. There is nothing to insist a new account number should not be issued, provided appropriate measures are taken to protect the integrity of the system.

In this particular case, the card holder has to go back to the actual issuing office, identified by the fifth through seventh digits on his card.

There appears to be no substitute for this procedure – even the main office of the system in Lansing, Mich., cannot handle such a changeover, since the card was issued originally in Southfield.

At Southfield, the old number will be canceled and a new number will be issued as soon as Frank Raben, the area credit manager, is certain the old cards will not be reused. (He wants them in his hands, and suggests Bazaj cut them up before sending them through the mails to him.) The new number will have the appropriate billing date digits.

So, that's the numbering system, as far as I currently know it. And I agree with Bazaj – it has the capability for locking people into decisions (such as billing dates) without them knowing it – and for no good, current technical reason I can see.

Billing dates are items a person will want to change perhaps every time the pattern of payments reaching him changes.

Moving from being paid monthly on the first even to monthly on the 10th is a small enough change, but will certainly alter a person's bill-paying patterns.

To incorporate such temporary, changeable factors into the identification number is to hurt the whole purpose of having really permanent identification numbers that are not altered by small items such as changes of jobs, etc.

Once temporary characteristics get frozen into permanent ones, what Bazaj called "another example of the inhuman, mighty computer" becomes highly likely.

It becomes, in fact, another "hot spot" in the design of an information system, which is likely to rub people the wrong way.

Inadequate Supervision Normal

From the fact the Michigan BankAmericard sent out such a misleading response to Bazaj's perfectly reasonable request, it is clear it is not watching for such imperfections in its operations carefully.

Such lack of stringent control over the information being given out is, in my observation, normal and, unless otherwise specified in the operations manual and included in the costs attributable to the operations of the Michigan BankAmericard system, something about which the computer analysts have no reason to complain.

The need to use such corner-cutting methods is a result of the design of the general BankAmericard numbers and so cannot be laid at the door of the Michigan people.

That, however, makes the problem of the BankAmericard "inhumanity" more important, rather than excusing anyone concerned.

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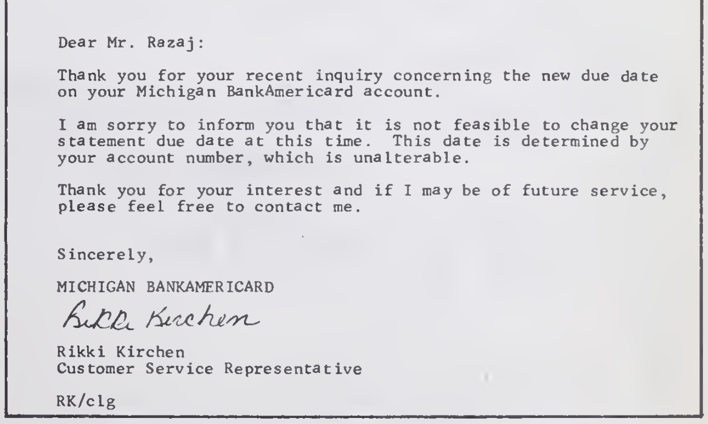

MICHIGAN
BANKAMERICARD
P.O. BOX 993/LANSING, MICHIGAN 48904

June 3, 1975

Suresh C. Razaj
3554 Pheasant Run #8
Ann Arbor, MI 48104

RE: #4460 150 225 235

Dear Mr. Razaj:

Thank you for your recent inquiry concerning the new due date on your Michigan BankAmericard account.

I am sorry to inform you that it is not feasible to change your statement due date at this time. This date is determined by your account number, which is unalterable.

Thank you for your interest and if I may be of future service, please feel free to contact me.

Sincerely,

MICHIGAN BANKAMERICARD

Rikki Kirchen

Rikki Kirchen
Customer Service Representative

RK/clg

This letter, while accurate in stating an account number is unalterable, is inaccurate in claiming this means Suresh Bazaj cannot have a different statement due date. Investigation showed a "hot spot" exists in the numbering methods currently used by this BankAmericard system and probably by many others. The letter, sent out with errors corrected in blue ink, is further evidence of the lack of quality supervision.

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Letters to the Editor

Report Writer: A Yea

Until I read William B. Simmons' June 18 article on the Cobol Report Writer, I was unaware I was in the minority in the programming world.

The management services group I work in has 13 programmers, and everyone uses Report Writer. When I have to use a non-report Writer compiler, I find the programming of reports very tedious.

Long may Report Writer wave. This is one minority member that doesn't feel discriminated against.

Wally Juntunen
Minneapolis, Minn.

. . . And a Nay

In response to William B. Simmons' article on the merits of the Cobol Report Writer [CW, June 18], we would like to suggest a few of the reasons we feel the Report Writer is not a tremendously useful programming tool.

We agree the generated object code of the Report Writer uses an excessive amount of core but, as with any program, this is not a problem if sufficient core is available. The real problem is in storing the Report Writer object code on the resident core image library.

It has been our experience that we can store fewer Report Writer programs than programmer-coded print programs. Although we have not attempted any formal benchmark testing, in a comparison of two of our small, simple label prints, the Report Writer generated an additional 8K of object code to be stored.

We assume, and experience tends to support, that the larger and more complex Report Writer programs will generate an even higher volume of excess object code, thereby rapidly decreasing the available core image library space.

F.E. Chereck
E.J. Duszak
Chicago, Ill.

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Package Creates Reports for EEO

ATLANTA – IBM 360/370 sites can keep pace with increasing Federal Government regulations in the areas of Equal Employment Opportunity (EEO) and health and safety by utilizing the Personnel Management and Reporting System (PMRS) from Management Science America, Inc. (MSA).

PMRS is designed to be compatible with MSA's payroll system, but it can be used independently if that approach suits the user's situation better.

If the systems are used together, a single personnel/payroll master file is maintained, avoiding duplicate input and maintenance efforts, MSA noted.

The basic personnel system within PMRS maintains and reports on data in the areas of personal information, educational background, skills inventory and current job of each person in the file.

Performance and salary review information, notations of qualifications and preferences, benefits and health and safety factors are also carried in the basic system.

The "add-on" modules extend the basic maintenance and reporting capabilities to include position control, benefit programs from the employer's perspective, lost time, applicant flow through various processing cycles, manpower development and labor relations.

The reporting features of PMRS produce personnel information profiles and a host of federally mandated equal employment opportunity reports and others directly supporting the corporate management of the user organization.

While the basic reports are generated as a regular part of PMRS processing, the system also includes a Special Report Generator (SRG) to provide users with a means of creating one-time summaries of data or other unique output.

PMRS apparently needs 32K bytes of main storage. Used in combination, MSA's payroll system and PMRS run in 120K; used by itself, the payroll system requires about 87K, a vendor source noted.

The basic PMRS module costs $15,000, he said, and the add-on features cost a further $3,000 to $6,000 each.

MSA is at Suite 1300, 3445 Peachtree St. N.E., 30326.

Programmers Offered RPG-II-Rule

HOUSTON – Hexco, Inc. has an RPG-II-Rule that has eight RPG-II specification layouts, scales for print positions, vertical line spacing and 96-column card volumes.

The stainless steel rule is priced at $12.50 from the firm, which can be reached through P.O. Box 55588, 77055.

Fortran, Algol, APL 'Revolutionary': Perlis

By Edith Holmes
Of the CW Staff

NEW YORK – In testimony before the U.S. District Court here as a witness for the government in its antitrust case against IBM, Dr. Alan J. Perlis identified three well-known languages which he contended revolutionized the computer industry.

A professor of computer science at Yale University, Perlis said Fortran is probably the language with which people are most familiar. Most of those involved with computers "were suckled on Fortran," he noted.

Perlis expressed greater admiration for Algol, first developed by a joint American/European group in the 1958-1960 time frame.

"Algol demonstrated that languages could be developed by man at will for a variety of purposes," he said.

Asked why Algol had not gained greater acceptance among users and manufacturers as a result of its flexibility, Perlis replied that it was not introduced in connection with any one computer and thus had no I/O specifications written into it.

Devised by Kenneth Iverson while an instructor at Harvard University, APL won the "most likely to be the prototype for future languages" award from Perlis. An interactive language, APL can be used to write compact programs over a whole range of scientific and business applications, according to Perlis.

"Not only is it stable, but it can support 50 users simultaneously on an IBM 360 machine where other languages struggle to maintain 12 such interactive users," he said. APL has picked up a variety of users who have nothing in common but that language," Perlis added.

When asked why he didn't include Cobol in his list of memorable languages, Perlis explained that, while Cobol is as familiar as Fortran, it is simply not one of the best ways of doing programming.

"Cobol can be said to be a standard because, if manufacturers want to do any computing for the Federal Government, they had better design machines geared to this language," he stated.

MMAS Runs on IBM S/32

Turnkey Programs Lure Manufacturer

ATLANTA – First-time DP users in small manufacturing concerns can have turnkey support on an IBM System/32 in the planning, control and analysis of financial and operational functions with the latest Industry Application Program (IAP) from the vendor's General Systems Division (GSD).

Nine applications encompassing four basic areas are included in the Manufacturing Management Accounting System (MMAS). In most cases, the applications can be used separately so the user can build up to an integrated system in stages, GSD noted.

Financial accounting support includes applications in order entry and invoicing, inventory management, accounts receivable, sales analysis, payroll, accounts payable and general ledger.

Both cost control and engineering managers can utilize the product definition and costing application while cost control and plant floor management share the facilities of the production status and costing application, a spokesman added.

Following the pattern set at the introduction of the System/32 in January, the applications provided in these IAPs are tailored to user specifications – for a price – during installation by GSD and require no programming by the user.

Though RPG-II source code may be available once MMAS is ready for delivery – in August, according to present plans – user changes in IAP coding might invalidate GSD support, if a warning issued in January continues in effect.

Changes in such things as payroll tax rates, however, are anticipated and can be handled by the user through table entries and would not come under the basic "don't-touch" prohibition.

The MMAS programs were designed for firms with 20 to 250 employees and annual revenues of $1 million to $5 million. They can also be used by large manufacturers who need a small, tailored system for an individual department or plant, GSD suggested.

Several of the MMAS applications and the System/32 on which to run them can be rented for less than $1,000/mo. For example, a manufacturer can lease payroll, accounts payable, general ledger and product definition and costing for a $1,795 initial charge and a monthly charge of $80.

Under a three-year lease plan, the lowest priced System/32 leases for $770/mo, bringing the monthly charge to $850.

The monthly license fee for each of the nine applications ranges from $18 to $27 and the initial charge from $405 to $615.

TMS Controls Tapes Under Edos

RICHMOND, Va. – Users of the Extended DOS (Edos) from The Computer Software Co. (TCSC) now can have control and protection of tape-oriented files as an integral part of their operating system through the use of the vendor's recently announced Tape Management System (TMS).

Control centers on a data set name file which is on-line at all times, although an operator override capability is included if a situation arises that requires immediate intervention. Beyond file name, TMS also checks the days and the number of processing cycles the file has been active.

Cycle counts are incremented by the system itself once a run has gone to completion. A tape can carry a cycle number beyond that specified as protected by the user, but the system will not allow it to be "scratched" without user consent, TCSC noted.

The system includes automatic volume recognition, eliminating the need for specific job control assignments. Operators may mount tapes on any available drive and TMS will resolve the physical unit address.

Even multireel files which the user might normally access through alternating drive assignments can be handled on an "any-drive-available" basis with this capability, TCSC indicated.

If a tape hasn't been mounted somewhere by the time the application program needs it, TMS generates mount messages which the vendor feels are clearer than those produced by other similar packages.

At the other end of the processing cycle, TMS supports early release of each drive so it becomes immediately available for other use as soon as the tape reel previously mounted has been closed and – presumably – rewound and unloaded. In some systems, drives are not released until the entire program has completed execution.

TMS can be used with basic Edos and is available now for $25/mo on a 24-month lease, $100/mo for 12 months or $125/mo on a month-to-month rental.

TCSC is at 6517 Everglades Drive, 23225.

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Renamed BBUG Seeks CPE Papers, OKs Vendor Exhibits at Confab

By Don Leavitt
Of the CW Staff

SAN FRANCISCO – Vendors of computer performance evaluation (CPE) products will have the chance to exhibit their wares and various authors of papers related to CPE have been invited to present their views at an upcoming conference of what used to be a user group devoted to one vendor's products.

CPE has outgrown the confines of any single type of tool and that is the primary reason this year's conference will include vendor exhibits and seminars. And why BBUG – the Boole & Babbage Users Group – is formally shedding the limitations of a single-vendor orientation, according to program chairman Kenneth W. Kolence.

The national organization has in fact abandoned the BBUG name and is now known by the same name as the regional meetings it has organized over the past six months – the Computer Management Group (CMG).

The conference – scheduled for the Hotel St. Francis here Oct. 7-10 – will carry the dual designation CMG/BBUG VI.

The important point at this time, however, is that users with any experience in the field may submit papers for possible presentation, Kolence stressed.

The call for papers is "late but sincere," he said, adding that the field will grow only as users share their experiences with others. Papers should be submitted as soon as possible, however, so they can be refereed and organized by topic before the October meeting.

Kolence was quick to point out that the vendors are invited to be part of the conference but "their own part, not the technical program." That way, users can get as much detail as is available on given products without having sales pitches get in the way of the technical discussions.

The invited speakers will be balanced not only by submitted papers, but by a special series of papers presented by Sigmetrics, the measurement group of the Association for Computing Machinery, with which BBUG held concurrent and sometimes joint meetings in Montreal last year.

A highlight of the conference will be the announcement of the winner of the second annual A.A. Michelson award for past and continuing contributions to computer metrics.

President of CMG/BBUG is Don Deese, an analyst-technician at the Federal Computer Performance Evaluation and Simulation Center in Washington, D.C. 20330.

Papers and suggestions for the conference itself should be submitted to Kolence, an independent consultant, at 3591 Louis Road, Palo Alto, Calif. 94303.

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Varian V70 Gains RPG-II

IRVINE, Calif. – An industry-compatible RPG-II compiler and runtime package for its V70 series of minicomputers has been announced by Varian Data Machines for delivery starting in November.

As a stand-alone "host" language processor, the package runs under the Vortex or Vortex II operating systems. The compiler occupies about 5K words; object code for a 200-statement program, runtime routines and table space will require about 6K words, the vendor said.

Varian's RPG-II will also serve as a report-generating mechanism for the V70/Total data base management system developed recently by Cincom Systems [CW, March 26]. In that setting, RPG-II allows the user to define input specifications, calculations required and output desired. The generated program handles all the application logic and interfaces with the data base.

The one-pass RPG-II compiler system will sell for $500, Varian noted from 2722 Michelson Drive, 92664.

Meanwhile, 'Life' Goes On at SBC

GREENWICH, Conn. – An integrated life and health insurance management information system on a remote batch basis is now available through the network facilities of The Service Bureau Co. (SBC).

Under an agreement with TCC, Inc., an insurance software and consulting services company, SBC will supply the computing power and TCC the consultant, installation and education support for Life/70.

A typical user inputs transactions into the system periodically each day through a batch-style terminal. Output from overnight processing against the system policy master file includes new business/policy issues, policy maintenance, general accounting and general ledger, policy accounting, premium billing and notification.

Agency reporting, commission accounting, policy exhibit and valuation and periodically adjusted earnings/natural reserves and sales profit analyses are also available.

The design of Life/70 as an integrated management system provides insurance companies with a data base for additional, unanticipated "on-demand" management reports and analyses using SBC's Data Base Report Writing System, without the cost and time delays associated with writing a new program for each requirement, a network source noted.

The costs for Life/70 will be based on a feasibility study, installation services and a monthly charge based on the number of policies processed. Insurance companies with less than 50,000 policies are SBC's primary marketplace, the spokesman added.

The network, available by a local telephone call in 1,600 cities in the U.S., Canada and Europe, is headquartered at 500 W. Putnam Ave., 06830.

'Scald' Assures Clean CPM Net

LANSDOWNE, Pa. – Project planners, burned in the past because of poor input for a critical path method (CPM) analysis, can do better now – if they have lots of main storage and a Fortran compiler – with a CPM network preprocess called the Scott Associates Loop Detector (Scald), according to a Scott spokesman.

The function of Scald, he explained, is to insure that clean networks are fed into the higher overhead scheduling systems, whose loop detection capabilities tend to be less efficient than those in this software. Scald checks for open ends and loops and identifies both conditions when encountered.

The techniques built into Scald take advantage of the relatively low cost of today's storage and internalize all processing, including sorts. The current version, written in Fortran IV, processes networks of up to 4,000 nodes and 7,500 activities and requires a partition of 236K, the vendor said.

Flexible Parameters

The parameters are flexible, however, and more or less storage may be assigned to increase or decrease the size of the network to be analyzed, the spokesman added.

The preprocessor is said to be "highly efficient," resulting in costs of approximately one-tenth of a cent per activity, regardless of the size of the network.

The approximate linear relationship between cost and network size is "very important to CPM users," Scott noted, since loop detection in large scheduling systems "can be an expensive proposition."

Scald is available now on a rental basis for $20/mo to in-house users and $40/mo to commercial vendors of computer time from Scott Associates at 40 West Drexel Ave., 19050.

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In Hierarchical Approach for Users

BDLC Protocol an Extension of Dynamic Net Concept

By Ronald A. Frank
Of the CW Staff

DETROIT – The Burroughs Data Link Control (BDLC) communications protocol [CW, July 2] is an extension of the dynamic network concept, which the supplier began several years ago.

The addition of BDLC is a further step in Burroughs' program of providing a hierarchical approach for data communications users. The advent of IBM's System Network Architecture (SNA) was patterned along the lines of the earlier dynamic network concept, according to a Burroughs spokesman.

Although some similarities can be drawn between the two network approaches, BDLC has not been designed to be compatible with IBM's Synchronous Data Link Control (SDLC). It is identical to the High-Level Data Link Control (HDLC) proposal put forth by the International Standards Organization (ISO).

The HDLC framework has been adopted by many vendors and networks operating in other countries. There is some reason to believe IBM will eventually modify its SDLC to be compatible with the HDLC proposed standard, but IBM has not officially announced such a change.

Remote Subsystems

But BDLC users with Burroughs equipment will be able to transmit data to IBM 360/370 mainframes. This will be done by establishing remote terminal subsystems operating behind Burroughs controllers. The controllers will handle the transmission to and from the terminals in BDLC, and then they will provide the necessary translation capabilities to transmit to IBM mainframes in SDLC or whatever other protocol is required such as binary synchronous communications, a Burroughs spokesman said.

The first operational demonstration of BDLC is being planned for August at the company headquarters in Detroit. There are currently some customer test sites in operation, but the first scheduled installations of BDLC-oriented network will be in the first quarter of 1976 or soon thereafter, a spokesman said.

Analysis

BDLC-Compatible Equipment

It is expected the Burroughs protocol will herald a series of new terminal and other communications equipment that will be designed to operate in the BDLC environment.

At present, the company has two terminals in the field that are described as BDLC-compatible. These are the TC140 and the TC3500. Each of these units contains microprocessors which can operate under the BDLC protocol, the spokesman said. BDLC will be available for these terminals later this year.

Most Burroughs networks now operate in Basic mode which is similar to binary synchronous but not directly compatible. These users will be able to upgrade to a BDLC environment with a minimum of problems, according to the company.

Exact specifications for BDLC are available, but documentation will not be released, the spokesman said. User documents about the protocol are being developed, he added.

Protocol Implementation

The protocol can be implemented either in hardware or software or a combination of the two, depending on the specific network. Major advantages of BDLC include full-duplex operation with less line turnarounds and control overhead and greater reliability. The capabilities of BDLC include both multipoint and point-to-point applications.

The protocol uses the 16-bit polynomial for checking, which is described as more accurate than the current block check, according to a Burroughs spokesman. This polynomial is included in the HDLC standard as a frame check sequence, he said.

For multipoint nets, BDLC has a variable-length information field. In the past, there were special requirements for multipoint message structures and this will no longer be necessary under BDLC.

BDLC has been under development for some time at Burroughs. At one point, the company issued an earlier specification of a full-duplex protocol which was known as Bold. This later evolved into the present BDLC protocol.

Seven-City DDS Rate Goes Into Effect

WASHINGTON, D.C. – The Federal Communications Commission (FCC) has allowed the AT&T seven-city rate for Dataphone Digital Service (DDS) [CW, June 18].

The tariff became effective on June 27, since the commission took no action on the AT&T proposal. Only one request to suspend the tariff was received by the commission.

Several days before, the phone company made some changes to its seven-city tariff. At 9,600 bit/sec, the seven-city monthly rate now equals the five-city charges for DDS.

At 4,800 bit/sec, two changes were made. The monthly rate from Baltimore to Washington was raised from $150.60 to $151.60, and the monthly rate from New York to Newark was boosted from $128.50 to $136.

AT&T also made some changes in mileage charges for routes of 500 miles or less. These will apply in cities with Type II Data Access Lines. The new rate will be 90 cent/mile with a station charge of $25/mo for the first station and $10/mo for additional stations.

The latest DDS modifications were made to comply with the FCC ruling that required the seven-city rates to be no lower than current private line charges.

User Modems Allowed

In a related development, AT&T notified the FCC it would allow the use of non-Bell modems on certain DDS facilities. Originally, Bell had said analog extensions to the nearest DDS facility would require the use of Bell data sets. This was challenged by the Independent Data Communications Manufacturers Association.

As a result, AT&T wrote to the FCC stating it planned to "file appropriate tariff regulations permitting customers to provide their own data modems at their premises on such analog extensions."

The tentative date for filing these changes is the first quarter of 1976, a Bell spokesman said. One reason given for the delay is AT&T does not want to affect the current DDS proceedings now pending before the commission, the Bell spokesman said.

It is expected the new tariff will contain a charge for the analog channel and an adapter charge that will include a data set, a Data Service Unit (required on DDS) and the charges for a Data Access Line.

The non-Bell data set will be used at the user's locations but it will have to be end-to-end compatible with a Bell data set installed at the DDS end of the analog link.

Underwood Elected ICA President

SAN FRANCISCO – At the recent annual conference of the International Communications Association (ICA) here, the user organization elected officers for the coming year.

Roger Underwood of Kaiser Aluminum & Chemical Corp. is president with Raymond Reamer from IBM Corp. first vice-president.

Elected second vice-president was Thomas Hogan of Monsanto Co. with Edward Vennum of LTV Corp. assuming the post of treasurer. Wylie Deakin of TRW, Inc. was elected secretary.

Information about the ICA is available from William Johnson, executive secretary, Box 863, Mundelein, Ill. 60060.

Sycor 350 Integrated Terminal Features Dual Flexible Disks

ANN ARBOR, Mich. – Sycor, Inc. has unveiled an integrated dual flexible disk intelligent terminal.

The Model 350 terminal is described as the lowest-priced dual flexible disk unit on the market. It combines the capabilities of the company's Model 340 with a two-diskette option in a desk-top unit.

The Model 350 features a movable typewriter-like keyboard, nonglare 576-character display screen, 16K bytes of programmable memory and 500K characters of random access diskette storage.

The flexible disks are housed in the front panel of the Model 350 for ease of access, Sycor said.

Sycor's system program library, containing over 100 programs and providing system control and utility routines, can be used on the Model 350.

The library also contains an enhanced version of the company's proprietary Terminal Application Language, dubbed TAL II, with subroutining and labeling capabilities as well as increased communications capabilities, a sort program, a blocking utility and Ebcdic compatibility.

The basic Model 350, including 16K bytes of programmable memory and dual flexible disks, is priced at $286/mo on a one-year lease and $247/mo on a two-year lease. Both prices include maintenance.

The purchase price of the unit is $9,600. Delivery is 60 days from the firm at 100 Phoenix Dr., 48104.

The *quiet,* reliable AJ630

The AJ630 is a solid state, non-impact printer terminal that has a lot to offer— • speeds up to 30 cps • prints 140 characters to a line • holds a 15", 400' roll of paper • provides all 128 ASCII characters • two character buffer, plus options such as internal modem for DAA or acoustic coupler. There's a lot more in our 4 page brochure, it's yours for the asking.

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Ill. Bank Uses 3600 for Transactions

SPRINGFIELD, Ill. – Illinois National Bank has become one of the first commercial banks to process customer transactions with the IBM 3600 finance communication system.

The system features 42 keyboard display terminals for teller use at the bank headquarters and a nearby facility in downtown Springfield. Tellers in both lobby and drive-in facilities are equipped with the terminals.

"The 3600 system provides prompt and efficient customer service, comprehensive management information, reasonable cost and ease of operation," A.D. VanMeter Jr., president, said.

Using a keyboard display terminal, a teller can process customer transactions, including checking and savings account activity and installment loan and mortgage payments.

As information is entered through the keyboard, a teller can display and verify the information, spotting and correcting errors. The display also provides response to a keyed inquiry, such as the customer's current balance.

Each teller terminal is linked to one of three controllers which communicates with an IBM 370/135 at the main bank. The controller helps tellers handle entire transactions, such as savings deposits. The teller enters the amount for deposit and the customer's account number at the keyboard display terminal.

This information goes to the controller, which automatically performs computations. The teller inserts the customer's passbook into the passbook and document printer, and the controller supervises printing of the new total in the passbook.

Terminal Transactions

At day's end, the 3600 eases the task of teller balancing. Each controller can instruct a printer to list for every teller the transaction, account number and amount, including cash paid or received.

Training Aid

The teller terminal helps process transactions and train new tellers. The terminal can flash step-by-step instructions to guide a new teller through each transaction. Bank officials say this is valuable in training part-time tellers and reducing errors.

With the finance communication system, Illinois National Bank will have the capability of implementing an on-line self-service banking terminal – the 3614 consumer transaction facility. This component of the system permits customers to withdraw cash from up to four different accounts – savings, checking, credit card or a special account. Customers can also inquire about the current balance in their accounts.

To use the terminal, a customer inserts a plastic magnetic stripe identification card into the terminal. If the identification card is valid, a guidance display panel instructs him to key in a personal ID number at the terminal keyboard.

The customer presses a series of keys on the keyboard to indicate the desired transaction. The system validates the transaction and dispenses up to $400; the customer's account is debited and the card returned.

The 370/135 mainframe at the bank offers capacity to handle both the finance communication system and a customer information system. The latter provides officers with up-to-date profiles of any customer's total relationship with the bank.

An IBM 3600 finance communication system installed at Illinois National Bank helps process more than half a million transactions at the bank's drive-in facilities.

Data Briefs

Broadband Nets Get Intech Modem

RONKONKOMA, N.Y. – Intech Laboratories, Inc. has a data modem designed to be used on broadband transmission networks such as terrestrial microwave links and satellite links, particularly for data-under-voice or data-over-voice applications.

Data rates of 1,200-, 2,400-, 4,800- and 9,600 bit/sec and 19.2-, 50- and 230.4 kbit/sec are the standard rates offered. Other rates such as 750 kbit/sec, 1.544M bit/sec or higher are available.

The Intech data modems can be used for multipoint polling service or point-to-point dedicated service.

The equipment has interchangeable interface options allowing use of RS-232C, Bell 303 current or other special interface arrangements. There are no operating controls on the unit.

There are four LED status indicators providing visual monitoring of the operational status and signal quality. The indicators and functions include Power On, which indicates proper power supply operation; CTS Clear to Send in polled operation; and Data Valid, which indicates the proper receipt of data, recovery of clock and acceptable data quality.

Data quality is sensed by continuous monitoring of certain redundant elements in the transmission and modulation format. Pilot Lock indicates capture of system pilot, thus showing proper operation of the majority of the receiver section.

The unit price of the basic modem is $1,950 for data rates up to 230.4 kbit/sec. Intech Laboratories is at 4175 Veterans Highway, 11779.

Scope Data Extends Printer Line

ORLANDO, Fla. – Scope Data, Inc. has announced an addition to its line of Series 200 teleprinters.

Designated the Series 200/XL, it is capable of printing up to 132 characters on standard 8-1/2-in.-wide paper. Utilizing 16.5 char./in., the printer forms characters in a 7 by 9 matrix and offers a 96-character font with upper and lower case.

The Series 200/XL is available as a keyboard send/receive (KSR) or read-only (RO) printer with selectable speeds of 7.5-, 10-, 15-, 30-, 60-, 120- or 240 char./sec.

Maintenance Offered

The Scopex plug-in module swapout maintenance program or maintenance by Sorbus, Inc. will also be offered. Series 200/XL prices start at $2,045 with delivery in 90 days from 3728 Silver Star Road, 32808.

Our RDS-500 minicomputer is used on six continents for oil exploration — and also keeps profit-making machinery well-lubricated.

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Photographed at the Sahara Casino, Las Vegas, Nevada.

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33s Get Edit Aid

PHOENIX – United Data Services Company, Inc. has introduced a tape editing accessory for use with Teletype Model 33 ASR terminals.

The tape editing accessory increases the capability of a Model 33ASR teletypewriter by adding the basic tape reader control functions "necessary for efficient off-line punched paper tape editing," United Data said.

Single-character STEP (read and punch) and SKIP (ignore) tape advance, combined with continuous RUN and STOP control, make it possible to locate and delete or insert characters during tape duplication without having to repeatedly turn the punch or reader on and off, the company said.

The tape editing accessory is priced at $89.50 and available immediately from 3024 North 33rd Drive, 85017.

Monitors Feed Data to Money-Market Traders

NEW YORK – Morgan Guaranty Trust Co.'s electronic financial information system uses 65 Conrac video monitors to display data to traders. The Conrac equipment forms part of an overall system supplied by Information Concepts, Inc. of New York.

Terminal Transactions

The complete system provides up-to-the-minute information to Morgan Guaranty's money-market traders and sales personnel. These specialists handle up to $3 billion a day of such money-market instruments as U.S. government and agency bonds, municipal bonds, federal funds, negotiable certificates of deposit, bankers' acceptances and commercial paper.

The Conrac equipment receives 40 "pages" of computer-generated digital data, converts this information to video form and provides up to 60 video signal outputs for driving the CRT monitors.

There are 55 independent channel selectors associated with the viewing monitors that allow the user to select any of the 40 "pages" of data for display on his screen. Each "page" can handle up to 2,000 characters.

The Conrac video display system is designed to allow easy expansion to up to 50 pages of input and 70 video signal outputs on a plug-in basis.

Morgan Guaranty Trust Co.'s traders can instantly select any of 40 "pages" of information for display.

TBS Offers Decwriter Options

SAN JOSE, Calif. – Timeshared Business Systems (TBS), a time-sharing computer utility and service firm, has developed three service options for the Digital Equipment Corp. Decwriter LA 36 computer terminal, which TBS is now handling in the San Francisco Bay area.

The first option allows form feeding utilizing any size form from 1/6-in. through 21-1/6-in. The special form feeding may be selected at any runtime, according to a spokesman.

Also available is an automatic send/receive (ASR) version of the LA 36, featuring a Philips-type cassette. The cassette unit offers stop, start or correction within a single character, switch-selectable speeds between 110 and 1,200 bit/sec, X-on and X-off recognition and RS-232 or teletypewriter interfaces. Also available with the cassette is a search and skip unit.

Keyboard Switch

An additional option offered for the Decwriter is a keyboard switch which permits selection of either upper-case only keyboard entry or the use of the full upper/lower case Ascii keyboard.

Price of the basic terminal, with 132-column adjustable forms tractor using one- to six-part standard paper, switchable 110-, 150- or 300 bit/sec operation and line-feed catch-up buffer for true 30 char./sec throughput is $1,850.

The form feed option costs $195 and the upper/lower case keyboard switch option is priced at $60. The cassette unit costs $1,870 and the search option for the cassette is $50.

TBS is at 3031 Tisch Way, 95128.

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Logical Growth Pattern — Part I

Mini Flexibility Now Means Better DP for More Users

By Gerald R. Doctor
Special to Computerworld

The minicomputer supports a logical growth path from simple remote terminal control to complete transaction processing capability.

For the user, the implications of this migration means he will be getting much more for his money because of the multi-application usage of the shared minicomputer.

For the vendor, this approach provides for upgrades to more sophisticated equipment and a broader customer base as the product expands to encompass new areas of information processing.

Minis in these large information processing networks can be divided into three distinct functions:

- Front-end processors that interface the main center to the communications network.
- Network controllers that are used within the communications network to direct the flow of data (such as in a message switcher).
- Data entry controllers that perform I/O functions for each terminus of the network.

Minicomputer Requirements

But the hardware requirements for the data entry controller are particularly suited to minicomputers. First of all, a wide variety of flexible communications controllers and device adapters is required to support the terminals/devices.

Interrupt response time and I/O device handling speeds are important parameters.

In addition, the system must be highly configurable, to allow connection of a variety of peripheral devices, depending on the application. Minicomputers fulfill all of these requirements.

Software Flexible

Supporting software must be flexible and able to handle various terminals using different code sets, formats, terminal interfaces and line control disciplines.

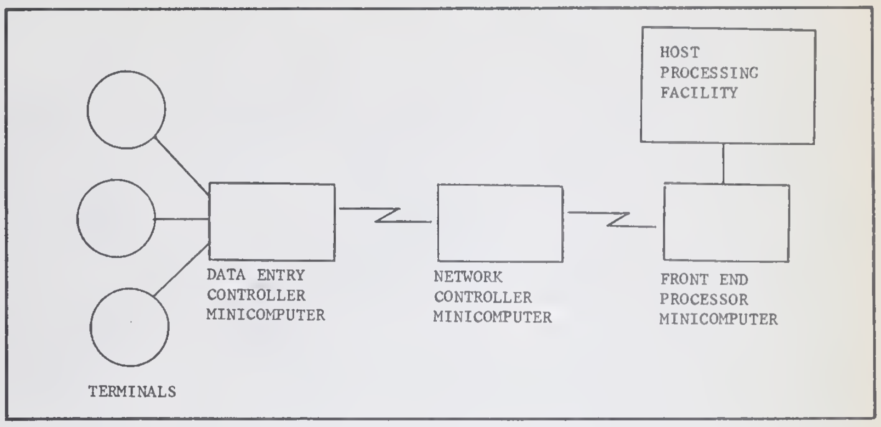
The terminal controller minicomputer, as the first level processor in a network, performs necessary translations from external codes/formats, etc., to the standards used in the communications network, thus relieving processors higher up in the network hierarchy from any external device-specific considerations.

The systems software must provide for terminal controller and concentration functions, terminal routing (to determine where a given message should be sent), buffering (for data records sent from the host facility in response to inquiries from the terminals) and support for the communications protocol of the remote host.

Applications software is also required to link a given terminal with the appropriate data editing logic and, in some instances, to provide transaction processing capability and access to a local or remote data base.

The minicomputer used as a data entry controller then implements the desired terminal functionality through application-specific software within a cost-effective, high-performance hardware configuration.

Data entry tasks are off-loaded from the host processor and data is validated and edited prior to submission to the host for higher level batch processing.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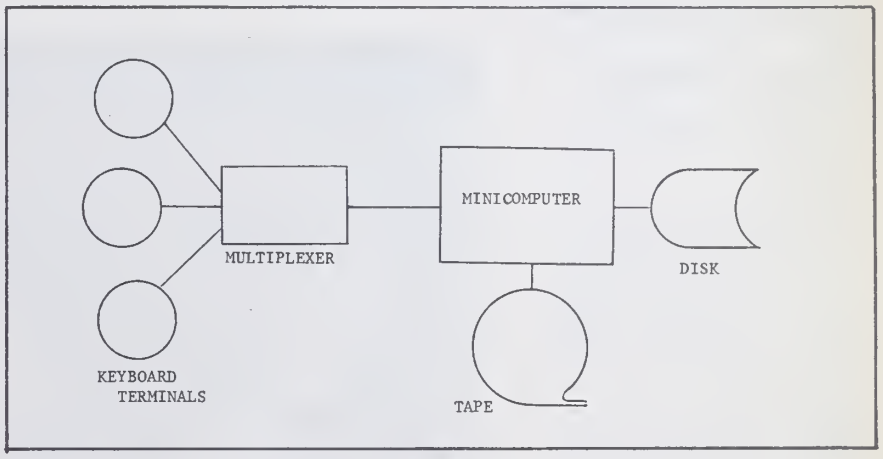
Minicomputers in Network Support



Shared Processor Data Entry System

Where applicable, portions of the transaction processing tasks may also be included in the terminal functionality.

Minicomputers as data entry controllers have historically been most notable as key-to-disk systems, which have been around since about 1969. Early key-to-disk systems were keypunch replacements only, but they are now being recognized as powerful aids to data entry in all forms, reducing costs, greatly increasing flexibility, providing a growth path to multifunctional data entry capability and becoming an integral part of the data communications network.

Perhaps key-to-disk should be referred to not as merely key-to-disk systems but as shared-processor data entry systems because of the potential to become a complete data entry system with almost any kind of data check imaginable under program control.

System Features

A shared-processor data system performs what is known as machine-oriented data capture; that is, the system has a high degree of control over the operator who is required to make very few decisions.

The operator keys data in the most convenient order, and the system restructures the data to meet the user's file requirements. This kind of system is suitable for the high-volume-production, batch environment.

During operation, data is temporarily stored on disk to be later written as related batches on tape or printed. The minicomputer programs provide for extensive checks on the content of the data, such as:

- Check digit.
- Range check.
- Special character sets allowable.
- Table look-ups.
- Batch totals, document totals.
- Interfield, interrecord dependencies.

Discovery of errors during data transcription rather than later in the processing cycle is thus possible, assuring clean data to be input to the host processing facility.

Today's shared processor systems offer communications capability to allow batch transfer of keyed data to the host processing facility.

This involves the addition of communications controller hardware, a software driver for this controller and support for the particular communications protocol desired. (Most often the protocol used is Binary Synchronous Communications (BSC) because the interface is usually to an IBM 360/370 host, but we can expect the independent manufacturers in the near future to provide Synchronous Data Link Control (SDLC) and High-Level Data Link Control (HDLC) interfaces.

Doctor is a senior principal engineer in Honeywell's Minicomputer and Network Support Department.

Qantel Adds System 950, CRT, OS Improvements

HAYWARD, Calif. – Qantel has added a system, inquiry-only CRT terminal and several enhancements to its operating system.

At a purchase price of $29,500, System 950 will be ready for delivery this month, the firm said. Its basic configuration includes the standard Qantel processor with 8K of user memory; a 6M-byte disk drive (3M-byte fixed; 3M-byte removable); a 27-line, 1,728-character-CRT terminal; and a 45 char./sec auxiliary printer.

Qantel's terminal displays 15 lines and 960 characters of on-line data.

Unlike others in the Qantel product line, this terminal limits operator entry to the screen's bottom line. It's intended to meet customer needs for a CRT terminal to be used for inquiry-only rather than for full data entry, according to Qantel. It's priced at $3,450.

Qantel's operating system, Best, now permits Systems 800 and 900 to accept as many as eight terminals in handling two separate jobs, the firm said. As long as system capacity is not exceeded, any combination of video display, video inquiry or printing terminal can be used, the vendor said.

Maximum disk capacity is also increased by the Best improvements, with up to 24M characters of on-line data storage made possible by adding an additional 12M-byte disk drive.

Scheduled for the third quarter, another version of Best is expected to yield an extra 2K of user memory to customers with certain System 800 and 900 configurations. Depending on the configuration, that extra 2K can be shared by two jobs or simply allocated in total to one, the firm said.

Best also is said to permit Systems 950 and 1200 to handle as many as four jobs simultaneously, again with any combination of up to eight video display, video inquiry or printing terminals, as long as system capacity is not exceeded.

Standard Memory Increased

Standard user memory on Systems 950 and 1200 has also been increased up to 8K. On System 950, that standard can be expanded in one 8K increment to a maximum of 16K, while System 1200 will accommodate three 8K increments to a maximum of 32K, according to the firm.

System 950 has the same disk storage expansion characteristics of Systems 800 and 900: up to 24M characters in most configurations and up to 36M in certain others. System 1200 retains its maximum expansion capability of 120M characters of on-line disk storage.

Because of System 950's higher capabilities and lower price, System 1100 will be discontinued on Sept. 1.

The price on Qantel's largest video display terminal (27 lines, 1,728 characters) has been reduced by $1,000, down to $4,950. It will replace the smaller video terminal in all Systems 900, 950 and 1200. The smaller video display terminal will be discontinued on Sept. 1.

On Sept. 1, the price for System 1200's basic configuration will be increased to $35,500 from its present $32,445.

Intersil Microcomputer Uses DEC PDP-8/E Instruction Set

CUPERTINO, Calif. – The IM6100 CMOS microprocessor, according to manufacturer Intersil, Inc., is the only single-chip microprocessor which recognizes the instruction set of the Digital Equipment Corp. PDP-8/E.

The 12-bit IM6100 consists of six 12-bit registers, a programmed logic array (PLA), an arithmetic and logic unit (ALU) and associated gating and timing circuitry.

It is said to provide all control signals necessary to interface directly with standard memory components, switch registers, I/O devices and a stand-alone control panel containing its own memory, separate from the main system memory.

The IM6100 uses a single 5-volt supply and has an on-chip crystal-controlled oscillator, eliminating need for clock generators and level translators, Intersil said.

The device operates with standard MOS random-access memories (RAM) and programmable read-only memories (PROM), using no more than six standard 54/74 TTL packages for interface.

The IM6100 is packaged in a 40-pin package and priced at $395.

The firm is at 10900 N. Tantau Ave., 95014.

Data General Adds Diskette Subsystem

SOUTHBORO, Mass. – Data General Corp.'s (DG) own diskette subsystem is available in 315K-byte (single drive) or 630K-byte (dual drive) configurations and includes a controller for up to four drives, power supply and necessary cabling and terminations.

Software support as an I/O device is provided by DG's Real-Time Disk Operating System (RDOS). The diskette extends the capabilities of all Nova and Eclipse computers, according to the firm.

The diskette drives are also available in add-on configurations, allowing a diskette subsystem to be expanded to a maximum capacity of 1.26M bytes. The diskette can be added on to Data General 10M-byte cartridge disk subsystems as well, with software support.

The diskette subsystem uses low-cost flexible recording media introduced through a slot on the front of the drive unit.

A head-positioning system controls the radial positioning of the head to any of 77 tracks.

The price of a two-drive diskette subsystem is $3,900. A subsystem with one drive costs $2,900.

The diskette storage subsystem is used when inexpensive program or data storage is required. In transaction-oriented systems, a diskette can act as a rolling buffer for backup storage.

In smaller, stand-alone systems, a diskette can store backup programs to increase capacity in areas such as order entry processing and local data compression, the firm said.

The subsystem also has the ability to do overlays and maintain sequential or random files.

Miniworld Products

Fabri-Tek Memory Fits DEC PDP-12

MINNEAPOLIS – Fabri-Tek, Inc.'s Model 8 add-on core memory system offers a 24K-word system for the Digital Equipment Corp. PDP-12s.

The Model 8 is a self-contained, plug-compatible unit priced at $5,200 for 24K words.

The Model 8 is said to provide three times the storage at half of DEC's 8K-word memory price. With a change in the interface, the Model 8 will also operate with PDP-8s, the firm said.

The firm is at 5901 S. County Road 18, 55436.

SUE Line Adapter Allows Linkage Of Four Devices

LOS ANGELES – A 4-channel asynchronous line adapter on a single board is now available for the Lockheed Electronics Co., Inc. SUE computer system. The controller is capable of local or remote interfacing of up to four devices such as CRTs, modems, plotters or printers.

Each channel is individually controlled and programmed for data format, bit/sec rate, status and commands, and can operate in either full- or half-duplex mode.

The interface is compatible with EIA standard RS-232C and Bell 103 or 202 data sets. Up to 15 different bit/sec rates are jumper selected on each channel. Also featured is programmable auto-answer and data terminals ready.

The controller is list priced at $1,580 from the firm at 6201 E. Randolph St., 90040.

Acquisition Unit Announced by SAI

TROY, Mich. – System Associates Inc. (SAI), has announced a computer-controlled data acquisition system that allows over 1 million data points to be acquired and stored from a process.

Data can be acquired at a rate of up to 86,400 point/sec, according to SAI.

The key feature of the system is that all acquired data can be simultaneously streamed to disk storage, the firm said.

The system features computer, disk storage, magnetic tape, analog-to-digital interfacing unit and air conditioned portable enclosure.

The system also allows the operator to view test results graphically and run statistical analysis on them.

Hard copy can be generated for later engineering analysis.

Fully configured systems range to $80,000. The firm is at 55 Park St., 48084.

Sorbus Maintains CIP/2000s

CINCINNATI – The CIP/2000 series of minicomputers and related peripherals from Cincinnati Milacron Co. will be maintained in the U.S. (with the exception of California, Michigan and the Cincinnati, Houston and New York City areas) by Sorbus, Inc.

DG, DCC Minis Get Interface

MINNEAPOLIS – Custom Systems, Inc. has added a general development board to its line of minicomputer interfaces. The Series 140 General Development Board, priced at $375, is designed to provide special interface capabilities to Data General Corp. (DG) or Digital Computer Control's (DCC) DCC-116 minicomputers.

The basic board includes data bus buffering, device select and priority logic and space for mounting up to 65 additional integrated circuits. Space is also available for wrap pins for the development of special interface logic.

Options include buffered I/O and buffered direct memory access logic and wrap pins as required.

Custom Systems manufactures a broad line of peripheral interface controllers, primarily for use with minicomputer systems. The firm also supplies turnkey minicomputer-based systems with both hardware and software.

The firm is at 4935 Boone Ave. North, 55428.

EMC Links Plant, Control Room

COCKEYSVILLE, Md. – EMC Controls, Inc. has introduced a process data acquisition and control system called Emcon.

Designed for continuous-process, batch-process and discrete-piece industries, Emcon works by itself or in synergy with a host computer to create an interactive link between plant and control room.

The system comprises a software-supported minicomputer CPU connected by a single I/O interface to any number of remote multiplexers servicing sensors and controllers, the firm said.

Typically, from several hundred to many thousand data and control points may be included in the system, EMC said.

All data and control communications between the mainframe and remote multiplexers travel over one multiconductor instrumentation cable which may be common for the entire plant.

Remote multiplexing not only saves wiring and installation costs, but also represents an advantage in flexibility.

Relatively simple data acquisition and communication functions are assigned to Emcon, while complex, reiterative, number-crunching tasks can be assigned to the host computer.

Emcon takes care of addressing points, performing security checks, reducing data to engineering units, bulk-reading data into the host computer, communicating with the operator and dispatching control commands to the field.

This is said to reduce the load on the host computer, making more of its time available for running optimization programs, computing material and energy balances, evaluating throughput and preparing statistical reports for management.

The systems are priced from $20,000 from the firm which can be reached through Box 242, 21030.

Digitizer Works With DG Systems

SYOSSET, N.Y. – The 1120 computer-aided digitizer station from Algorex Data Corp. (ADC) is said to be designed to operate with any Data General Corp. computer system.

The 1120 is an intelligent digitizer that facilitates the conversion of sketches or drawings into a computer data base.

The digitizer station consists of a digitizing table with 36-in. by 48-in. working surface. A free-moving electromagnetic stylus or four-function cursor is the coordinate sensor while a 12-in. alphanumeric display presents prompting messages and the coordinate data.

The 1120 is supplied with the Algorex CAD^3 (computer-aided digitizing, drafting and design) application software.

Computer-generated commands are displayed on the screen to help the operator.

Prompting Message

A prompting message on the screen guides the operator to make the proper command choice from a fixed tablet menu and a dynamic electronic menu. A built-in feature automatically compensates for misalignment and stretch of the paper mounted on the digitizer table, the firm said.

The 1120 furnishes an RDOS compatible output file that can be interfaced to output equipment such as photo plotters, pen plotters or magnetic tape. The output data base may also be fed into another computer for further processing.

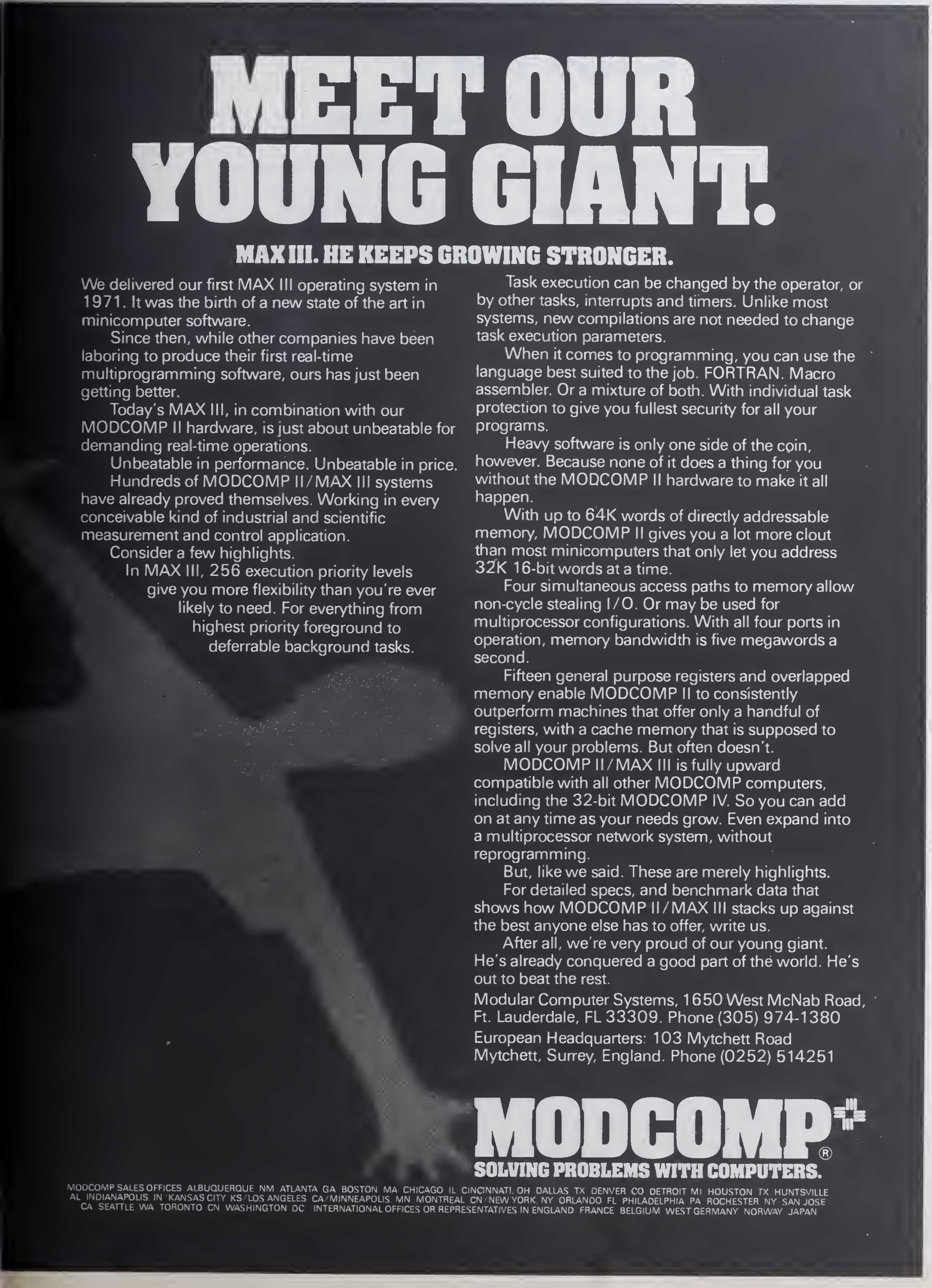
The 1120 sells for $24,000 from ADC at 6901 Jericho Turnpike, 11791.

120-Vac Line Monitor From LRS Costs $99.50

ARLINGTON, Mass. – The Power Sentinel is a $99.50 120-Vac line monitor from LRS International.

This IC-based fault detector uses light-emitting diodes (LED) to indicate short-term low and high voltage conditions and power outages.

The firm can be reached through Box 283, 02174.



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MODCOMP II/MAX III is fully upward compatible with all other MODCOMP computers, including the 32-bit MODCOMP IV. So you can add on at any time as your needs grow. Even expand into a multiprocessor network system, without reprogramming.

But, like we said. These are merely highlights.

For detailed specs, and benchmark data that shows how MODCOMP II/MAX III stacks up against the best anyone else has to offer, write us.

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For More Power at Same Price

135 User 'Upgrades' to 360/65

By Patrick Ward
Of the CW Staff

LOS ANGELES – What is the answer when a computer services department needs more CPU capacity to do its job, yet can't spend any additional money to get it?

That was the dilemma confronting Sunset House, a mail-order supplier of gift items and housewares here.

The firm has an on-line order entry system with extensive validation software. Operators at 40 IBM 2260 CRTs input between 20,000 and 40,000 orders daily.

At night, the shop batch processes the orders, costs them out and generates invoices, picking orders and mailing labels.

The computer services department also prints mailing labels for the more than 60 million catalogues the company periodically sends out during the year.

Beyond these tasks, the Sunset House DP group is responsible for accounting, general ledger, personnel and labor distribution reporting systems.

When Sunset House first computerized its order processing in 1969, the firm opted for an IBM 360/40 with a backup 360/30.

By the fall of 1973, there was a need for more computing power, Chris Dermand, vice-president of computer services, recalled.

But by early 1974, Sunset House was once again CPU-bound. The shop had been running DOS on the 40 but had switched to DOS/VS on the 135. With the heavy printing load on the shop's three IBM 3211s and one 1403, throughput snags developed.

"It was a problem of only having 144K and being resident on five 2314 disks," Dick Sutherland, director of systems and programming, explained.

"IBM did come in and tune up the system. We rewrote our print program so it was a little more efficient and that helped," Dermand said.

Even so, it was apparent the 135 was not up to coping with Sunset House's expanding workload.

Alternative Solutions

The computer services group considered going to 3330 disks, "but we couldn't interface them to the Model 30 we needed for backup," Sutherland observed.

IBM recommended a 370/145, a substantially more expensive system than the 135.

"My management instructed me to do whatever was necessary to get whatever additional capacity was needed to do the job . . . but without spending any more money," Dermand recalled.

After talking to three or four leasing vendors, Sunset House hit upon a solution in late 1974 with a 512K 360/65 on a three-year lease from Boothe Computer Corp. The system came with eight 2314s instead of the five on the 135 and ran under the Extended DOS (Edos) operating system from Computer Software Co. of Richmond, Va.

And its cost "was within a few dollars of what we had been paying IBM each month," Dermand said.

As for software conversion, "we just took an old DOS system pack and we generated a complete Sysgen from Edos in about four hours," Sutherland said. There were no changes in application software.

The shop has since freed about five hours daily of CPU time with the 65 because of "tremendously improved throughput," Sutherland said.

Internal speed on the 65 is five times that of the 135, he said. The shop now runs six partitions on the 65 compared to the maximum of five on the 135 and "everything is in real core."

Sunset House did have some problems when it first brought in the system, Sutherland remembered.

"We have Electronic Memories & Magnetics memory, we're leasing from Boothe, and we have the 2314s from IBM," he said. When the leased 65 arrived, there were some shakedown problems that led to fingerpointing among the vendors.

The initial problems have since been resolved, and Dermand and Sutherland said they have no complaints about current hardware reliability or maintenance.

Office Binding Device Handles DP Printouts

NEW WINDSOR, N.Y. – Monarch Metal Products has introduced an updated version of its thermal-type office binding machine. Designed specifically for printouts, it is said to produce a permanently bound volume in three minutes.

Bound pages lie flat for easy reading and the flat covers facilitate stacking. The device eliminates the use of expensive binders and saves paper by using the entire sheet, the vendor said.

The device costs $410 from the firm at P.O. Box 4081, 12550.

Intel Ups 370/135 to 1M Bytes

SUNNYVALE, Calif. – IBM 370/135 users can expand their memory up to 1M bytes, twice the amount available from IBM, with Intel Corp.'s In-7135 add-on memory system.

If a user does not need 1M bytes of storage now but would like to have the option to upgrade later, the system can be field-upgraded by adding memory cards and their associated card racks, Intel said.

The In-7135 memory system is housed in a swing-out cabinet 15 in. wide and 30 in. long. It attaches to the CPU in place of one of the service doors and will swing out to allow service access to the CPU.

Intel has been manufacturing standard capacity 370/135 add-on memories for approximately one year, but has been marketing them through leasing firms. The company has now established its own field sales organization and will market the In-7135 and other 370 add-ons directly to the end user.

The In-7135 is available for lease under two-, three-, four- and five-year terms. A typical 192K system may be installed on a two-year lease for about $3,000/mo, including Intel maintenance, the firm said from 1302 N. Mathilda Ave., 94086.

Although COM Cost, Space Savings Clear, Changeover Should Not Be Snap Decision

By John H. Barnes
And Ronald Utter
Special to Computerworld

Computer output microfilm (COM) systems can save money and space and provide other advantages too, but DP managers should first review many key criteria before they install a COM system.

Before examining these, a review of a COM system's basics is in order. The main component is the COM recorder, which generates either 16mm roll microfilm or 105mm microfiche from computer-generated magnetic tapes. In effect, it converts computer-generated coded alphanumeric information into readable form.

The film, or fiche, is developed, printed and duplicated as in regular microfilming operations, then distributed to users for viewing on standard micro-imagery readers.

As a method of information dissemination, COM is usually considered to be in between the computer line printer (which generates information on multipart, fanfolded paper,) and a real-time on-line system using CRTs at remote locations for swift data retrieval.

Elements of Cost Saving

The basic decision to buy or lease a COM recorder and associated equipment revolves around cost – "Is it cheaper to distribute information via COM than on paper?"

The answer, in most cases, is "absolutely." There are still documents, of course, that must be distributed on paper. Reports used for audit trails (where user must actually write on them for updating purposes) are an example. Fast turnaround reports needed for instant verification and editing of data are another.

Where microfilm is applicable, though, the first anticipated cost saving with COM is the difference between the high cost of fanfolded paper and the cost of film and processing.

The significant point here is that there is no limit to the number of copies of COM-generated microfiche. With fanfolded paper, however, the maximum number of copies is four. To produce additional copies, either line printers must be used off-line or the originals must be duplicated on copying machines.

Storage cost is another consideration; microfilm can be stored in far less space than paper reports.

To complete the cost decision, distribution should also be evaluated. Distribution of microfiche is far easier and far less expensive than internal distribution of bulky reports.

Presently, Manufacturers and Traders Trust Co. (M&T) in Buffalo, N.Y., is distributing 61 different COM-generated reports which account for about one million pages (or frames) of COM-generated material per month.

Reports include installment loans, trust, account trial balances, charge card information, revolving charge data, savings accounts, Christmas Club accounts and the like.

In addition, of another 239 reports now being generated on paper by computer line printers, it is expected that around 150 will soon be converted to COM.

(Continued on Page 22)

Labels Promise 'Quick Unstick'

PARAMUS, N.J. – The sticky problem of tape reel labels that either come off when reels are being processed or cannot be removed without tearing or leaving damaging residue is said to have been solved by Easy-Peel pinfeed tape reel labels from Kimball Systems.

The labels are made of a special stock and adhesive developed for magnetic tape reels and other computer hardware. Labels stay put on spinning reels but, when relabeling is required, come off cleanly in one piece without tearing, according to the firm.

Blank, thin sheet tape reel labels cost $10.42 per thousand in an order of 60,000. One-color imprinting is an additional $2.25 per thousand, the firm said from East 64 Midland Ave., 07652.

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SHRINK's compression rates average from 20 to 85%. Here are some sample benchmark results of SHRINK's compression.

Previously compacted files with much binary data	20-30%
OS object decks	43%
Report type data files	70-85%
File data consisting of alphameric, numberic and some binary items	60-80%

Compression/expansion is highly efficient requiring an average of only 1 CPU second per 100K bytes on a S/370/158. Sophisticated redundancy checking assures data integrity.

CPU overhead is minimized in random keyed retrievals and in transaction/master matching as only selected records need expansion. Further, compressed files can be sorted directly, reducing sort times and sort work space. Shrink will speed up I/O bound jobs by permitting more records per block size and fewer volumes per file. SHRINK is easy to use from any batch or on-line program. Installation and training takes an hour. A no obligation trial is available.

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Move to COM Should Not Be Snap Decision

(Continued from Page 21)

In spite of rapidly rising paper prices, M&T has been able to significantly reduce overall computer paper consumption and associated costs this year through the use of COM.

An excellent way for DP managers to gain experience with the use of COM is to begin on a trial basis with a local COM service bureau. Using such a bureau helps to make the transition to COM easier both for personnel in computer operations and for users of the generated data.

When M&T first began using COM, a COM bureau wasn't available in the Buffalo area. If M&T had had that kind of experience, start-up costs when COM recorders were actually delivered would have been less.

Almost more important than the purchase price or the terms of lease arrangement of a COM recorder and associated equipment is service. Fast efficient service by the equipment vendor is an absolute must, and this includes not only the COM recorder but service for readers and reader/printers as well.

It is most important to realize that actual users of computer-generated information must be sold on the fact that COM-generated microfiche is a viable alternative to hard-copy reports.

Probably the best way to accomplish this is a training program designed to explain the system and how it works to various operating personnel.

A DP manager should not try to sell and train all departments at once. M&T, for example, started with its mortgage department, then expanded into other consumer banking departments with COM-generated reports and training on their use.

The selling/training sequence itself began first with the department head, then with first-line supervision in the department and finally with the individual employees who would be using the reports on a day-to-day basis.

Is COM Compatible?

But all the selling and goodwill for COM-generated reports will disappear rapidly if COM microfiche cannot be viewed or copied on available microfilm readers and reader/printers.

At M&T, for example, there were over 250 readers and reader/printers in use in the source document microfilming operation long before COM was introduced. It was an important consideration, therefore, that COM fiche could be read on the same readers used in that operation.

The entire M&T microfilming operation is under the direct control of the data center; the COM recorder, a Bell & Howell 3700, is physically located within the confines of the computer secured area, as is the film processing and duplicating equipment.

Under this present organization, the whole computer and microfilming operation runs smoothly and the DP department can be of greater service to other bank departments and branches.

Having the COM operation under direct data center control provides several other advantages – the operator skills required to run COM equipment are similar to those required to operate computer mainframes and peripherals, and the computer and COM workload can be easily coordinated and scheduled from shift to shift.

Other Factors in Selection

What about backup to the COM recorder? Until the need exists for a second COM recorder in a given installation, backup from a COM service bureau is probably the best answer.

Second, on supplies (film, chemicals, etc.) required for COM in particular and for microfilming in general, quality should be the first consideration. The savings that result from using COM are great enough so that trying to save a small amount of supplies of lesser quality is not warranted.

Barnes is computer officer and Utter a methods analyst, at Manufacturers and Traders Trust Company in Buffalo, N.Y.

UK Import Powers 370/168

HAYES, England – The Silentblock power unit, developed by a British firm as an alternative to the motor generator sets usually supplied for the IBM 370/168, is said to offer numerous advantages, including elimination of computer downtime for generator changeover, a low noise level and a meantime between failures of 100,000 hours.

By sharing the workload with a similar power unit, it can operate in synchronous parallel, permitting an in-flight switchover facility between the units, according to the vendor, Manufacturing Processes Ltd. Output is 415Hz 75kW.

With size and styling matching other computer hardware, it can be installed in the computer room itself, reducing high-frequency cable runs to a minimum. Working at a noise level of 32dBA at 1.6yards, compared with 92dBA for motor generator sets, it can also be installed in an office.

The unit costs $22,000 FOB New York from the firm at Belvedere Works, Bilton Way, Pump Lane Industrial Estate, Middlesex.

JB Unit Detects Magnetic Fields

SAN DIEGO – The Model 918 magnetic field detector from JB Industries is said to instantly detect any movement of a magnetic field through its sensor area, alerting the user to any malicious or accidental attempt to carry a magnetic device into a protected area.

The magnetic field detector costs $2,495 from the firm at 6807 Convoy Court, 92111.

Realist Reader Gives Fiche User Double-Up Option

MENOMONEE FALLS, Wis. – For users who want to read two microfiche made at different reductions, Realist, Inc.'s line of Vantage readers offers an optional 5-in. by 12-in. carrier and dual lens assembly.

Users can load 42X or 48X fiche generated by computer output microfilm (COM) on one side of the dual carrier, for example, and use the other side for 24X source documents. Either fiche could be read by rotating the dual lens lever to change magnification.

The Vantage II reader with these options costs $236 from the firm at Megal Drive, 53051.

Correction

The Greyhound Phoenix I/O subsystem [CW, June 11] is priced at $2,400 for the System A.

The beginning and the end of data communications

A special supplement on Data Communications Terminals in the July 30th issue of Computerworld.

All data communications start and finish with data communications terminals. And you'll be reading all about them in our July 30th supplement. Edited by Ron Frank, this supplement will take an in-depth look at data communications terminals and their effective use in data networks. You'll see applications stories, tutorials and comprehensive articles on topics like these:

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- The Man-Machine Interface
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If you have anything to do with data communications, you should be reading this supplement from start to finish. And if you're marketing goods or services in this field, your ad should be there. Ad closing is July 11th. Contact the *Computerworld* salesman in your area for details, or call Judy Milford or Sara Steets at (617) 965-5800.

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CI Notes

Univac, Modcomp Get Nod For Roles in Space Shuttle

HOUSTON – Univac and Modular Computer Systems, Inc. (Modcomp) have received contracts totaling about $14.5 million from the National Aeronautics and Space Administration (Nasa) for equipment in the nation's Space Shuttle Program.

Nasa will purchase a Univac 1100/46 multiprocessing system to serve as part of the Shuttle Mission Simulator. The system will be used in training flight and ground crews. It will interact with both the simulator fixed base and motion base crew stations as well as a full network simulation on a real-time basis.

Univac will have the system through test acceptance 15 months after the contract award, the firm said.

Modcomp will deliver about 105 Modcomp II computers, software and peripherals valued at $6.5 million to form a network to provide the checkout, control and monitoring subsystem of the Space Shuttle's launch processing system.

American Used Buys Printers

BOSTON – American Used Computer Corp. has purchased Dataproducts Corp.'s lease base and off-rent inventory of off-line print stations.

American Used plans to sell and lease the units. Maintenance is available.

Lockheed Takes Over CNA Servus

LOS ANGELES – Lockheed Electronics Co., Inc. has arranged to assume responsibility for the management and operation of the former CNA Servus System, which will be operated as a separate unit of the Data Products Division.

The CNA Servus 100, marketed to insurance agencies, uses a Lockheed CPU. The CNA Servus systems staff has joined Lockheed.

Supershorts

Digital Equipment Corp. has delivered the first Decsystem 1080 to Morgan Construction Co. of Worcester, Mass.

– – –

Interdata is installing its first Model 8/32 Megamini at Tulane University, where it will be used in the School of Engineering.

– – –

A preliminary agreement has been reached allowing Memorex Corp. to market Business Systems Technology, Inc. (BST) core memories and disk controllers for IBM System/3 computers in Europe, Japan, Australia and Latin America. The equipment will be part of the Memorex line.

Between 1963 and 1971

IBM Market Share 60%-80%: Witnesses

By Edith Holmes
Of the CW Staff

NEW YORK – Sperry Rand Corp. and Scientific Data Systems (SDS) estimated IBM held between 60% and 80% of the computer market between 1963 and 1971 and its marketing policies and pricing methods did influence those of both Univac and SDS, executives of those firms testified recently at the U.S. vs. IBM antitrust trial.

Robert E. McDonald, president of Sperry Rand Corp., parent of Univac, and Max Palevsky former chief executive officer of SDS – now Xerox Data Systems – appeared as the first of a long line of industry figures testifying on behalf of the government.

Both firms followed IBM in bundling and educational allowances and priced their products below those of competitive IBM machines, McDonald and Palevsky said. Univac sought out special market niches, McDonald added.

Between 1963 and 1971, McDonald said, Sperry Rand estimated Univac and Honeywell each held 6% to 7% of the market in the early part of this time frame and 8% to 10% later on.

General Electric was assigned a share value never considered significant by McDonald; RCA, 3% to 4%; Burroughs, about 5%; Control Data Corp., between 4% and 5%; and IBM, between 60% and 70%.

McDonald indicated the increase in share for both Univac and Honeywell was due in part to their respective acquisitions of RCA and General Electric computer manufacturing operations.

Based on the total installed customer base, these percentages of market share stemmed from Univac's own study of the market through information gathered by its salespeople, studies and surveys by market research firms.

Market share information was considered very significant by Univac's top management in determining whether the firm could or should stay in the business, given its percentage of the market, McDonald said.

In establishing this system for measuring market share, Univac officials allowed for a 10% error margin up or down from the percentage for each firm and for the total market base.

While SDS had no formal mechanism for reporting the strength of competition in the marketplace, Palevsky said his firm judged IBM's share to be between 70% and 80%.

Marketplace Niches

The disparity between the Univac and IBM market share made it obvious that if Univac was to stay in the business, it would have to find niches in the marketplace rather than compete with IBM across its full product spectrum, McDonald commented.

Palevsky also testified IBM competed in a broader market than did any other company. No other company had the same ability to generate the investment needed for engineering and software development and field support, he said.

Univac, in particular, sought new customers in the Federal Government and in the airline reservations market in an effort to compete with IBM more effectively, according to McDonald.

The government was pursued by Univac because it was believed to show more sophistication in its procurement of general-purpose computers than did the general commercial user. Thus, the government would be less susceptible to the tremendous sales resources of IBM,

(Continued on Page 25)

CIA Asks High Court to Accept 'Amicus' Brief on IBM-Telex

By E. Drake Lundell Jr.
Of the CW Staff

WASHINGTON, D.C. – The appeals court ruling in the Telex vs. IBM case showed "little connection with the realities of the markets in the computer industry," according to a petition filed with the Supreme Court here by the Computer Industry Association (CIA).

The petition asked the court to accept a "friend of the court" brief from the association of independent firms in the industry.

The decision of the appeals court overruling the district court decision which found IBM guilty of monopolization "is of major concern to members of the association," the petition said.

"First, it appears to hold that legality under the antitrust laws of practices of the firm widely known to be dominant in the computer industry is to be gauged with primary reference to whether other firms may use similar practices, without reference to whether a combination of such practices with a dominant market position would have anticompetitive and exclusionary effect," the petition said.

Secondly, the circuit court wandered far afield in its market definition, the brief indicated, by "erroneously articulating more generalized market concepts which grossly distort the nature of the computer industry."

The amicus curiae, or "friend of the court," brief itself indicated the 10th Circuit Court of Appeals found IBM did not have a monopoly position in the DP industry even though the trial court in the case "held the evidence was insufficient for a finding on this point."

In addition, the appeals court ignored the internal IBM evidence that indicated the firm had a 70% to 75% share of the systems and peripherals market – "a market obviously much more relevant to the focus of the case: i.e., peripheral equipment compatible with IBM central processing units."

Further, "the circuit court erred in holding that there is no distinguishable, commercially significant submarket identifiable as the 'plug-compatible peripherals' market with respect to IBM equipment," the brief said.

The appeals court approached this market from the viewpoint of the sellers of equipment, the brief added, and not from the point of view of the users of such equipment, as it should have, according to the CIA.

The decision was also "far from adequate even if only the supply side of the market is considered," since the court only looked at the cost of engineering an interface and not the huge marketing and support costs involved, the brief said.

'Fundamentally Unsound'

The appeals court's finding on the legality of IBM practices in the marketplace was "fundamentally unsound," according to the brief.

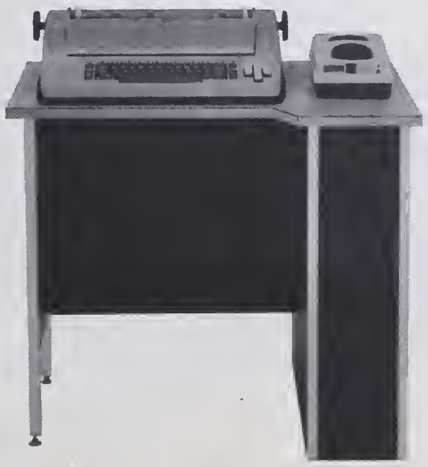
"The governing case law is that if IBM had a monopoly position or even substantial market power, it must avoid the use of practices not essential to commercial operation and which . . . would have exclusionary effects.

"Rather than use this test, the circuit court held that IBM could use the complained-of practice if other firms, with different market positions, used similar (not even identical) practices," the brief said.

"Finally, the circuit court brushed aside careful reports of specific intent to exclude rivals, an element of critical importance in determining the permissibility of conduct."

The court has not ruled on whether to accept the amicus curiae brief from the CIA, but some observers think the court is unlikely to accept it.

Generally the court frowns on amicus briefs unless both sides of the case agree to allow it. IBM has disapproved the CIA filing.



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Security Concerns Spell Market For Maker of Interrogator 880

By Nancy French

Of the CW Staff

CHATSWORTH, Calif. – The growing emphasis on security for DP installations has convinced a company specializing in "access control" for parking lots, banks and hospitals to introduce a security system for the DP center, known as the Interrogator 880.

Cardkey Systems has sold 59 systems since its introduction in October, grossing $750,000 on the effort, according to General Manager Mike Dimeo.

He projected sales of 10 systems a month for the balance of the year.

The system consists of a central controller – a solid-state microprocessor based on the Intel 8080 chip – card readers at every door and plastic ID cards with barium ferrite cores, each encoded with unique binary numbers.

An optional printer keeps an audit trail of date, time and ID number of every individual attempting to gain access.

It also notes whether the individual's ID was valid and whether he was allowed to enter.

The user company's security officer may change the status of an ID card or alter the doors an employee has access to by entering the information on a keyboard at the front of the device.

The card itself need never be changed, Dimeo explained.

Working on Distribution

Dimeo, who sees the 880 as an extremely profitable product, has been working to develop broader distribution.

A direct sales force will market the product in New York, New Jersey, Chicago, Houston and Los Angeles, he said.

In other locations, the system will be sold through distributors and dealers.

Finally, OEMs such as Walter Kidde Co., American District Telegraph and the Western Cullen Division of Federal Western will sell the system under their own label's as a means of expanding their security product lines.

While the basic system sells for little more than $10,000, "it can be customized up to about $60,000 to $70,000," Dimeo explained.

The 880 is especially appealing, he said, because "once a company purchases the basic system, it can be expanded as its needs change by adding memory boards, peripherals or new software packages in increments of a few thousand dollars.

"Small amounts like that are easy to budget, even in these hard times," Dimeo explained.

In addition to controlling access to an installation, the system's job can be expanded to replace time cards, time clocks or any other timekeeping method for hourly workers.

At the same time, the system can monitor alarm systems such as those for open doors and fire, he pointed out, providing security for an entire building.

The company's subsidiary in England will be manufacturing the product for sale in western Europe within two or three years, Dimeo said.

Cardkey Systems builds all its own telephone interfaces, the reader, the input terminal and the interface for use with a magnetic tape transport.

Three Scientists Named IBM Fellows

ARMONK, N.Y. – IBM has named three of its scientists IBM Fellows in recognition of their contributions to the field of computer technology.

They are Henri J. Nussbaumer, for the design of voice and data switching systems; Joseph P. Pawletko, for the development of electro-mechanical devices in printers; and Andrew R. Heller, for programming developments on the System/370 with virtual storage.

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Contracts

Computer Sciences Corp. has received a five-year, $7 million contract for facilities management from Zions Utah Bancorporation.

Remote Computing Corp. has received a contract valued at $4 million from Automated Mortgage Market Information Network, Inc. (Amminet) to operate the Amminet system for three years.

Kennedy Co. has received a $476,000 contract from the National Bureau of Standards for Model 9100 tape transports and controllers.

Datasaab-Valmet, a company jointly owned by Sweden's Saab-Scania and Valmet of Finland, has received a contract to deliver an electronic bank terminal system to the Soviet Union. The system will be installed in the Vneshtorgbank foreign trade bank at the Sheremetyevo Airport in Moscow to improve bank service to foreign tourists in anticipation of the 1980 Olympic Games.

Victor Comptometer Corp. has received a contract from CX Corp. to supply its Model 130 alphanumeric matrix printers.

National Sharedata Corp. has won a five-year, $3 million contract from Manufacturers Bank of Los Angeles to manage and operate the bank's DP facility.

Systematics, Inc. has received a long-term contract from the National Bank of Jackson, Mich., for management and operation of a central DP facility.

Beehive Medical Electronics, Inc. has been awarded a contract in excess of $250,000 by Medlab Computer Services, Inc. for Mini Bee 2 video display terminals.

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Calcomp Jumps Highest in Fortune Second 500 Listing

NEW YORK – Profits of *Fortune* magazine's second 500 largest U.S. firms grew five times as rapidly as for the first 500 for 1974. California Computer Products (Calcomp), ranked 819 and a newcomer to the listing, scored the largest single gain as its net income jumped 1,764% to $8.67 million from $465,000.

The office machinery industry as a whole, which included computers, showed a 9.9% profit gain over 1973. This, however, was in comparison with the 60% profit gain realized in 1973 over the previous year.

In total return to investors, the median for all industries was down 26.99%, but down 41.24% for office machinery.

Total return to investors for the decade 1964-1974 was up 1.52% for all industries, down 2.87% for office machinery.

In terms of sales, office machinery as a category showed an increase of 19.6%. The outstanding company in the industry, National Scmiconductor, which ranked 608 in the list with a jump of 272 positions from last year, had a sales increase of 115.5%, one of the 10 largest jumps among the second 500.

But National Semiconductor also ranked among the five lowest companies both in terms of sales per employee and assets per employee for all industries.

Overviewing the second 500, Ampex dropped 64 places to 513, with sales of $272 million while Tektronix jumped 54 places to 519 and Ball 25 places to 522.

Memorex Up 19 Places

Memorex, with sales of $217.6 million, was up 19 slots, ranking 600th, but Sanders was down 82 places, coming in at 713. Electronic Memories & Magnetics was also down from last year, dropping back 44 places to 894.

Hazeltine appeared at 979 in the listing, with sales of $94 million.

Rankings by assets and salcs of DP firms gcnerally showed less disparity than among the first 500 firms [CW, June 25]. Ampex ranked 513 in sales and 516 in asscts; Tektronix 519 in salcs and 524 in assets; and Sanders 713 and 772.

Among those with gaps werc Mohawk Data Sciences, which ranked 699 in salcs and 531 in assets, and Memorex, 600 and 532 respectively.

IBM Market Share 60%-80%

(Continued from Page 23)

McDonald said.

Palevsky said IBM's position in the marketplace, however, compelled SDS to offer its customers bundled prices, educational allowances and IBM formatting standards on tape and disk drives.

Affected Univac Pricing

McDonald also testified IBM's pricing decisions – especially bundling – did affect Univac's pricing behavior in turn.

Univac's policy throughout the 1963-1971 time frame was to provide potential customers with systems comparable with IBM's systems at prices 10% below those of IBM. McDonald said the lower price was intended to compensate both for Univac's smaller marketing force and its smaller image in the marketplace.

Palevsky noted SDS generally priced the components of its systems 10% to 15% or 15% to 20% lower than IBM prices for comparable equipment.

Univac followed IBM in bundling rental and lease prices, McDonald said, adding that only maintenance was priced separately.

To meet IBM's educational discounts, McDonald said Univac, too, established a discount policy. The company hoped to gain the same advantage of familiarity on the part of students that IBM had achieved and, to some extent, the Univac discount was successful, he said.

IBM Toughest Competitor

In 1966, when SDS entered the real-time systems market in which machines were built to handle a mix of business and scientific tasks, it found IBM the most difficult firm to compete against for three reasons, Palevsky said.

The choice of an IBM machine by a user would not tend to be as criticized within his organization as would systems manufactured by lesser-known companies, he said.

In addition, the IBM sales force was superb with respect to training and aggressiveness in the marketplace, and IBM's product range was appealing to customers because it allowed for growth, Palevsky noted.

Initially the SDS machines designed to meet scientific and business applications were superior to the IBM computers against which they competed, particularly the 360/44, he said.

He defined superior to mean "faster throughput for less cost," noting that in this respect IBM's devices were "significantly more expensive."

Difficult to Enter

Palevsky noted that, by the time SDS merged with Xerox in 1969, it had become more difficult to enter and stay in the systems marketplace. The lease nature of the market developed in the '60s had dried up the large gross profits once received from the outright sale of equipment, and specific application or special-purpose computing niches in the marketplace were disappearing as a result of the development of machines that could perform both scientific and business tasks.

In his testimony, McDonald said leasing dictates the capital requirements for the computer industry, indicating capital on the order of $500 million to $1 billion is now required to enter the field.

Neither Palevsky nor McDonald felt their companies competed with leasing companies, software houses or peripherals manufacturers.

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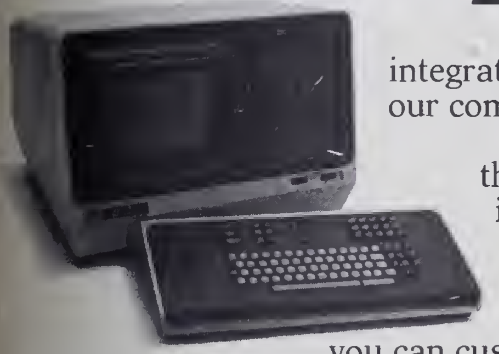

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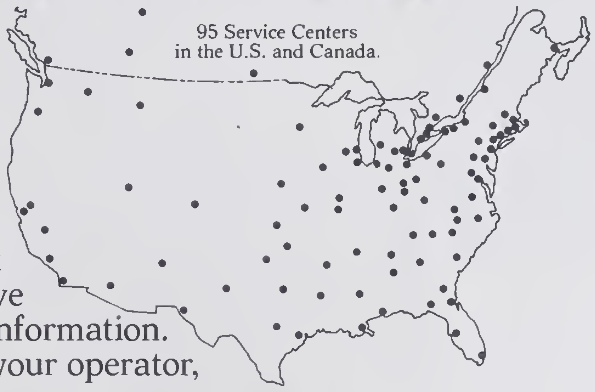

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For Complete Turnkey Systems

Minis Create New Breed of Consultants

By Leonard Farano

Special to Computerworld

NEW YORK – Minicomputers are here to stay and have created a new breed of consulting firm – the turnkey system supplier.

Rather than being primarily consulting and software houses, many firms now provide complete turnkey systems, including both hardware and software.

Despite differences in the size of client firms and the diversity of industries and applications, requirements for using minis are remarkably similar. These include:

- Need for on-line processing.
- Ability of the system to be transparent to unsophisticated end users.
- General absence of DP personnel.
- Ability of the system to operate in a stand-alone or communications environment.
- Need for the system to be installed on a turnkey basis, completely tested prior to installation and immediately operable upon installation.

First-time users usually require considerable assistance in defining their requirements. They know their business, but know little or nothing about computers, especially those that provide on-line capability.

In these cases, the client usually engages a consultant to perform a low-cost survey to define requirements, evaluate and select equipment, establish exact hardware and software costs and estimate potential savings.

This is where the change in the consulting business really becomes apparent. Consultants now have to be familiar with the extensive hardware offerings of dozens of minicomputer manufacturers.

In addition, they must be prepared to program new languages for new operating systems.

Since most minis are purchased, they must be prepared to advise the client about leasing arrangements, investment tax credit benefits of turnkey systems and many other nontechnical considerations.

In essence, such firms now provide a range of services to the smaller, first-time user similar to those available under the old bundled IBM approach.

To emphasize the range of companies now utilizing minicomputers, let's review some recent installations.

One of the most esoteric applications was the installation of a mini for a fruit auctioneer in the Bronx, N.Y.

The client's idea was to input data from the sales catalog from which the various products were sold. All subsequent billing, accounting and sales analysis processing could then be performed.

The client was shown how the minicomputer could be used to prepare the actual catalog the night before and thus replace a cumbersome composing process while simultaneously creating the catalog data base.

This required a fairly complex algorithm which printed the first and last pages of the catalog together and then worked toward the middle.

A New Jersey beauty and barber chair manufacturer was not only able to perform the applications of order entry, credit checking, billing, sales analysis, inventory control and gross profit reporting on a minicomputer, but also the difficult task of production scheduling.

The production scheduler can enter, through a CRT, the model he wishes to produce and the system, by performing a bill of materials explosion, will display the amount that can be produced indicating the component part with the least inventory.

Some of the minicomputer applications developed have subsequently become proprietary packages marketed by consultants.

Packages for specific industry applications enable the first-time user to obtain a totally tested and installed system at a price he can afford.

Medium and larger size companies are also investigating and installing minis at an increasing rate, especially for dedicated applications requiring on-line capability. Many have existing DP facilities but turn to turnkey software houses to install distributed systems for a variety of reasons, including lack of on-line, in-house systems experience, no more growth on installed mainframes and the high cost of communications.

Farano is executive vice-president of Gambit Management Strategies, Inc., a retail management consulting firm based in New York City.

Executive Corner

White Heads SBC

GREENWICH, Conn. – H.J. (Hank) White has been named president of Service Bureau Co. (SBC), replacing J.F. Williams, who resigned.

White was previously a vice-president of SBC and will remain a vice-president of parent firm Control Data Corp.

Other Moves

■ Donald F. Orr has been appointed president of Computer Machinery Corp. International.

■ Marcelo Gumucio has been named vice-president and general manager of Memorex's Americas and Asia Group.

■ Cornelius Peterson has been named president of Softech, replacing Douglas T. Ross, who becomes chairman of the board of directors. Justus F. Lowe Jr. has been named senior vice-president.

■ Thomas A. Takash has been appointed vice-president of equipment sales for Greyhound Computer Corp.

■ Bobby R. Cabaniss has been named vice-president of systems support and Richard A. Whitcomb vice-president of systems marketing of the Computer Products Division of Itel Corp.'s Data Products Group.

■ Paul M. Hachigian has been elected president and chief executive officer and a member of the board of directors of Compucorp.

■ Bernard Goldstein has been elected a director and Albert A. Eisenstat vice-president of administration and corporate counsel for Tymshare, Inc.

■ Theodore D. Puckorius has been named commissioner of the U.S. General Services Administration's Automated Data and Telecommunications Services.

■ Frank A. Kirby has been appointed vice-president of marketing at Ontel Corp.

■ Robert E. Daughtry has been appointed vice-president and manager of the finance and contracts departments of PRC Information Sciences Co.

■ NEC Microcomputers, Inc., the newly formed U.S. subsidiary of Nippon Electronics, has named Dr. Roger Bender president, George W. Muller vice-president and treasurer and Howard Sharek director of marketing.

■ William J. Mann has been named vice-president of operations at Mohawk Data Sciences Corp.

■ Stephen C. Zaleskie and Lawrence M. Kalmis have been elected vice-presidents and Karl Ahrens has been elected an assistant secretary of the Computer Leasing Division of James Talcott, Inc.

■ Norman J. Rahe has been appointed senior vice-president of finance and administration; and David S. Krueger, James R. Morgan and Russell E. Bartholomew have been appointed vice-presidents of operations, manufacturing and marketing, respec-

Turnkey Small Systems Adapso Seminar Topic

SADDLE BROOK, N.J. – A seminar on turnkey small business computers will be held at the Ramada Inn here July 30-31, sponsored by the Data Facilities Management Committee of the Association of Data Processing Service Organizations (Adapso).

The seminar will be introductory and will highlight opportunities and problems for DP companies, Adapso said.

Emphasis will be on commercial, business-type applications use, stand-alone systems, distributed processing or data bases, dispersed data entry/validation and development of long-term client relationships.

The fee for the seminar is $85 for members and $110 for nonmembers. Adapso is at 210 Summit Ave., Montvale, N.J. 07645.

ITT Inks Pact With ASI For ASI-ST Acquisition

TORRANCE, Calif. – Applications Software, Inc. (ASI) and International Telephone and Telegraph (ITT) have entered into a worldwide agreement for acquisition of the ASI-ST data management and reporting system.

Under the terms of the agreement, ITT unit companies and subsidiaries may obtain the ASI-ST at discounts from list prices.

The ultimate value of the sale could reach $1 million, accord-

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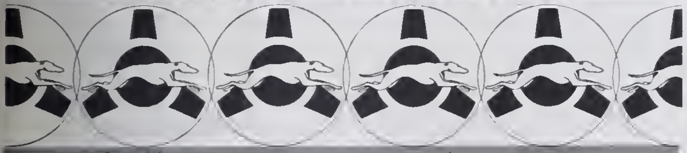

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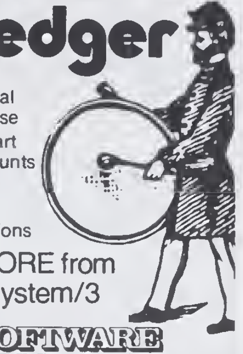

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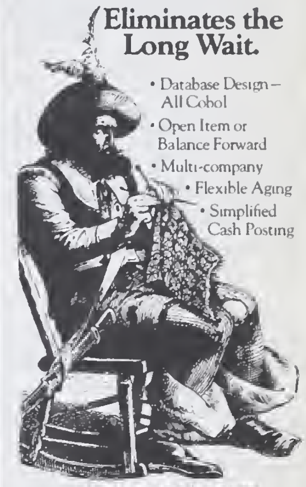

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Adage, a graphics equipment maker, has restructured its debt, converting it into notes to be repaid during the next four years at interest rates of 6% or prime, whichever is lower.

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Western Digital has obtained a revised $6.3 million loan from United California Bank, allowing the firm $2.6 million additional borrowings.

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Operating losses at American Satellite Corp. adversely affected first-quarter results at parent Fairchild Industries, which posted $691,000 in earnings compared with $1.5 million a year ago.

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Engineering Computer Systems of Lexington, Mass., a software and systems house, has changed its name to ECS Information Systems as a prelude to opening additional offices in the East.

CW Stock Index Shows Restored Health

By Molly Upton
Of the CW Staff

NEWTON, Mass. – Shades of '68. *Computerworld*'s Computer Stocks Trading Indexes at a quick glance today comes close to resembling the remarkable climb exhibited by all sectors of the index back in the first half of 1968.

During the last month, most particularly the week ended June 26, all sectors reached their highest points in 1975 and all of 1974 and, in most cases, topped those of 1973.

Coincidentally, the Dow Jones Industrial Average hit a 1975 high June 26.

In terms of percentages, the rates of climb exceed if not equal those of 1968, when the CW index started in March with a base of 100 for all sectors.

The composite average has more than doubled from 30 to 66 in the first six months this year, while during 1968 it only climbed to 152.

In the individual areas, computer systems is one of three areas that has failed to double, growing from 60 to 110. During 1968 the sector average jumped from 100 to 160.

The supplies area has more than doubled, from 43 to 87. During 1968 it only rose to 120.

The peripherals sector showed good growth, going from 12 to 30, while in 1968 it jumped to 155.

Leasing just about doubled, from 28 to 55, while it grew to 138 in 1968.

Software has grown from 32 to 60 so far this year. In 1968 it also showed stellar growth, nearly doubling to 192.

The sector highs compare with those of 1973 and 1972.

Computer systems' current high of 110 compares with 115 and 120 in 1973 and 1972 respectively; supplies, 87 to 87 and 88; composite, 66 to 62 and 75; and peripherals, 30 to 29 and 38.

Leasing showed its 1974 high of 55 compared with 40 in 1973 and 55 in 1972, while software is 60 compared with 52 and 63, respectively.

The range of the composite index is also similar to past years, spanning 30 to 66 this year compared with 30 to 62 in 1973 and 40 to 75 in 1972. The range during 1974 was a depressed 30 to 38.

Incoterm First-Quarter Net Makes Positive Showing in Plus Column

NATICK, Mass. – Incoterm Corp.'s first-quarter results showed a marked turnaround from those of the year-ago period and an improvement over those of the preceding fourth quarter.

Revenues grew to a record $7.6 million from $2.9 million in the first quarter of 1974 while earnings jumped to $713,000 or 36 cents a share, including a $193,000 tax credit, compared with a loss of $786,000 or 48 cents a share in the year-ago period.

The loss during the 1974 quarter was attributed to a slowdown in airline orders during the last part of 1973, the firm said.

The special tax credits have now been exhausted, the firm said.

Incoterm's first-quarter earnings of $713,000 compare with $623,000 during the preceding fourth quarter.

Diversification Program

President Jean N. Tariot attributed the continuing favorable performance of the firm to a product and market diversification program which has contributed to a broader base and expanded the firm's volume of business since the second half of 1975.

Backlog amounted to about $14 million, of which $5 million is scheduled beyond fiscal 1976 and is about equal to that of a year ago.

The orders are from a wide spectrum of customers, including insurance companies, banks, railroads, hospitals, service firms, government agencies and airlines.

Borrowings have been reduced to $1.5 million compared with $2.2 milllion at the end of last year.

DG Nine Months Continue to Rise

SOUTHBORO, Mass. – Data General Corp. boosted its earnings and revenues for the third quarter and nine months ended June 7 compared with the year-ago periods.

Earnings during the quarter rose to $2.9 million or 35 cents a share compared with $2.5 million or 31 cents a share in the same 1974 period.

Revenues Climb

Revenues climbed to $24.9 million compared with $21.3 million in the year-ago period.

During the nine months, earnings totaled $8.6 million or $1.05 a share compared with $6.3 million or 77 cents a share in the same period last year.

Revenues kept pace, rising to $73.6 million compared with $51.1 million in the 1974 period.

Brandon Earnings Double in Year

SAN FRANCISCO – Brandon Applied Systems, Inc.'s earnings more than doubled for the year ended Feb. 28 over the 1974 figures.

The firm, which performs program conversion services, earned $538,330 or 7 cents a share, including a $258,600 special credit, compared with $200,721 or 3 cents a share in 1974 when there was a $94,500 credit.

Revenues grew to $7.3 million compared with nearly $4 million last year.

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Earnings Reports

NATIONAL CSS
Three Months Ended May 31

	1975	a1974
Shr Ernd	$.46	$.43
Revenue	8,599,650	8,230,182
Earnings	511,300	472,100

a-Restated.

ALANTHUS
Nine Months Ended May 31

	1975	1974
Shr Ernd	$.86	$.78
Revenue	17,176,000	12,275,000
Earnings	1,331,000	1,095,000

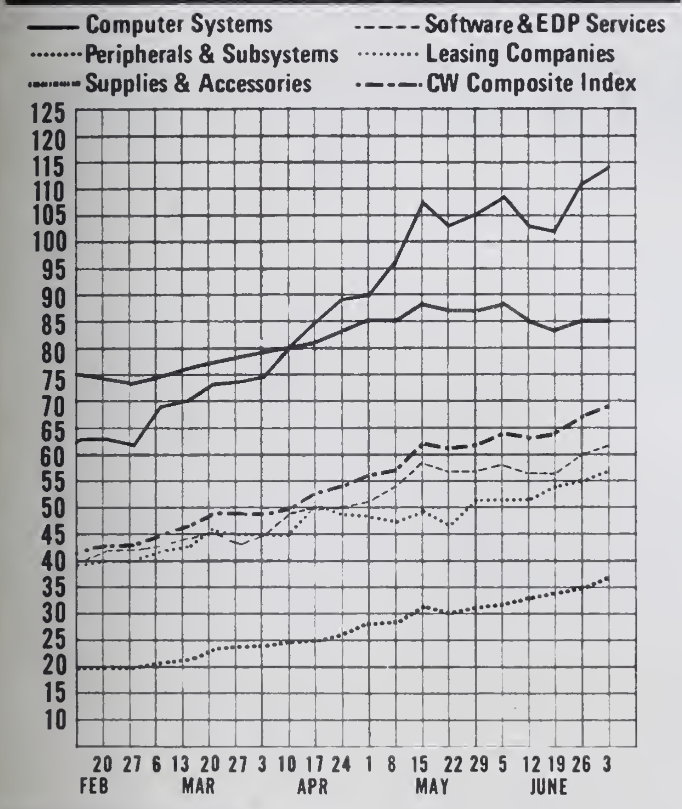
PRIME COMPUTER
Three Months Ended March 31

	1975	1974
Shr Ernd	$.03	.....
Revenue	2,226,392	$1,155,570
Tax Cred	26,565	30,836
Earnings	51,935	(242,691)

MINICOMPUTER SYSTEMS
Year Ended Oct. 31

	1974	1973
Shr Ernd	$.11	.....
Revenue	2,471,901	$933,963
Earnings	50,172	(27,117)

COMPUTERWORLD Computer Stocks Trading Indexes



DATA GENERAL
Three Months Ended June 7

	1975	1974
Shr Ernd	$.35	$.31
Revenue	24,873,000	21,346,000
Earnings	2,915,000	2,537,000
9 Mo Shr	1.05	.77
Revenue	73,631,000	51,125,000
Earnings	8,597,000	6,251,000

APPLIED DIGITAL DATA SYSTEMS
Six Months Ended May 31

	1975	1974
Shr Ernd	$.34	$.32
Revenue	7,149,559	4,007,317
Tax Cred	.....	663,000
Earnings	1,275,104	1,221,472

ENNIS BUSINESS FORMS
Three Months Ended May 31

	1975	1974
Shr Ernd	$.22	$.33
Revenue	13,401,468	15,113,179
Earnings	500,411	765,619

a-Restated to reflect change to Lifo method of inventory valuation.

BOOTHE COMPUTER
Three Months Ended March 31

	1975	1974
Shr Ernd	$.02	.....
Revenue	12,288,000	$11,609,000
Earnings	59,000	(873,000)

STANDARD COMPUTER
Three Months Ended March 31

	1975	1974
Shr Ernd	.....	$.05
Revenue	$1,541,000	1,518,000
Earnings	22,000	230,000

DATRONIC RENTAL
Three Months Ended March 31

	1975	a1974
Shr Ernd	.....	$.16
Revenue	$842,641	1,123,387
Earnings	1,031	108,796

a-Restated to reflect the change to an accelerated method of depreciation.

RECOGNITION EQUIPMENT
Three Months Ended April 30

	1975	1974
Shr Ernd	$.12	$.11
Revenue	18,727,000	12,330,000
Tax Cred	200,000	450,000
Earnings	694,000	526,000
6 Mo Shr	.24	.....
Revenue	29,012,000	19,080,000
Tax Cred	741,000	697,000
Earnings	1,349,000	(721,000)

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Computerworld Stock Trading Summary

CLOSING PRICES TUESDAY, JULY 1, 1975

TRADE*QUOTES

All statistics compiled, computed and formatted by
TRADE★QUOTES, INC.
Cambridge, Mass. 02139

COMPUTER SYSTEMS

EXCH		PRICE 1975 RANGE (1)	CLOSE JUL 1 1975	WEEK NET CHNGE	WEEK PCT CHNGE
N	8URROUGHS CORP	62-108	107 7/8	+1 3/8	+1.2
O	COMPUTER AUTOMATION	2- 8	8 1/8	+1 1/4	+18.1
N	CONTROL OATA CORP	11- 23	20 3/8	-2	-8.9
N	DATA GENERAL CORP	10- 35	35 1/4	+5 1/8	+17.0
O	DATAPOINT CORP	6- 25	23	+ 1/4	+1.0
O	DIGITAL COMP CONTROL	1- 4	3 1/4	0	0.0
N	DIGITAL EQUIPMENT	46-120	116 1/8	+4 1/2	+4.0
N	ELECTRONIC ASSOC.	2- 3	2 7/8	+ 1/8	+4.5
A	ELECTRONIC ENGINEER.	5- 10	9 1/4	- 1/4	-2.6
N	FOX8ORO	23- 40	39 3/8	- 1/8	-0.3
O	GENERAL AUTOMATION	6- 11	9 7/8	+1 5/8	+19.6
O	GRI COMPUTER CORP	1- 1	1/2	0	0.0
N	HEWLETT-PACKARO CO	58-119	116 5/8	- 7/8	-0.7
N	HONEYWELL INC	22- 40	38 1/8	-1 7/8	-4.6
N	I8M	158-224	208 1/2	-2	-0.9
O	MEMOREX	1- 10	8 3/4	0	0.0
O	MICROOATA CORP	2- 4	4 3/8	+ 1/4	+6.0
O	MODULAR COMPUTER SYS	5- 18	16	+ 1/4	+1.5
N	NCR	15- 39	34 3/8	-4 1/2	-11.5
N	PERKIN-ELMER	16- 30	29 5/8	+ 3/8	+1.2
N	RAYTHEON CO	26- 59	56 3/8	- 7/8	-1.5
N	SINGER COMPANY	10- 17	15 1/8	+ 3/8	+2.5
N	SPERRY RAND	26- 49	47 1/8	+ 1/8	+0.2
A	SYSTEMS ENG. LA8S	1- 5	4 3/8	+ 5/8	+16.6
O	ULTIMACC SYSTEMS INC	1- 6	6 3/8	+ 3/4	+13.3
N	VARIAN ASSOCIATES	7- 18	15 7/8	-1 3/4	-9.9
N	WANG LA8S.	7- 17	15 7/8	- 5/8	-3.7
N	XEROX COPP	51- 86	68 5/8	+ 3/8	+0.5

LEASING COMPANIES

EXCH		PRICE 1975 RANGE (1)	CLOSE JUL 1 1975	WEEK NET CHNGE	WEEK PCT CHNGE
O	COMOISCO INC	1- 5	4 5/8	0	0.0
A	COMMERCE GROUP CORP	2- 4	3 1/8	+ 1/4	+8.6
A	COMPUTER INVSTRS GRP	1- 2	1	- 1/8	-11.1
M	DATRONIC RENTAL	1- 1	3/4	+ 1/4	+50.0
A	OCL INC	1- 1	1/2	-	-11.1
N	DPE INC	3- 5	5	+ 1/8	+2.5
O	EOP RESOURCES	2- 2	2	0	0.0
A	GRANITE MGT	1- 5	4 1/8	- 5/8	-13.1
A	GREYHOUND COMPUTER	2- 3	3 1/8	0	0.0
A	ITEL	3- 8	7 3/4	+ 3/8	+5.0
N	LEASCO CORP	4- 8	5 7/8	+ 1/8	+2.1
O	LEASPAC CORP	1- 1	1/4	0	0.0
O	LECTRO MGT INC	1- 1	1/8	0	0.0
O	NRG INC	1- 4	3 3/4	+ 3/8	+11.1
A	PIONEER TEX CORP	2- 5	5	0	0.0
A	ROCKWOOO COMPUTER	1- 1	5/8	0	0.0
N	U.S. LEASING	9- 14	11 7/8	0	0.0

SOETWARE & EOP SERVICES

EXCH		PRICE 1975 RANGE (1)	CLOSE JUL 1 1975	WEEK NET CHNGE	WEEK PCT CHNGE
O	ADVANCEO COMP TECH	1- 1	7/8	0	0.0
A	APPLIEO OATA RES.	1- 10	2 1/2	0	0.0
N	AUTOMATIC DATA PROC	29- 62	57 1/2	- 3/4	-1.2
O	8RANDON APPLIEO SYST	1- 1	1/4	0	0.0
O	CENTRAL DATA SYSTEMS	3- 6	5 1/2	0	0.0
O	COMPUTER OIMENSIONS	2- 6	5 1/2	0	0.0
O	COMP ELECTION SYSTMS	3- 6	5	+ 1/8	+2.5
O	COMPUTER HORIZONS	1- 1	3/4	0	0.0
O	COMPUTER NETWORK	1- 3	3	+ 1/2	+20.0
N	COMPUTER SCIENCES	2- 6	5 1/4	- 1/4	-4.5
O	COMPUTER TASK GROUP	1- 1	5/8	0	0.0
O	COMPUTER USAGE	2- 4	2 1/2	- 1/8	-4.7
O	COMSHARE	3- 4	3 3/4	0	0.0
O	OATATA8	1- 1	1 1/4	0	0.0
A	ELECT COMP PROG	1- 1	1/4	0	0.0
N	ELECTRONIC OATA SYS.	12- 28	21	-1 7/8	-8.1
O	INFONATIONAL INC	1- 1	1/8	0	0.0
O	IPS COMPUTER MARKET.	1- 1	5/8	+ 1/8	+25.0
O	KEANE ASSOCIATES	2- 3	2 1/8	+ 1/8	+6.2
O	KEYDATA CORP	2- 3	2 3/4	0	0.0
O	LOGICON	3- 5	4 1/8	- 1/8	-2.9
A	MANAGEMENT OATA	1- 3	2	0	0.0
O	NATIONAL CSS INC	6- 14	12 1/2	- 1/2	-3.8
O	NATIONAL COMPUTER CO	1- 1	1/8	0	0.0
A	ON LINE SYSTEMS INC	8- 14	15 1/4	+1 7/8	+14.0
N	PLANNING RESEARCH	2- 6	4 7/8	- 3/8	-7.1
O	PROGRAMMING & SYS	1- 1	3/4	0	0.0
O	RAPIOATA INC	2- 5	5	+ 1/8	+2.5
O	SCIENTIFIC COMPUTERS	1- 1	1	0	0.0
O	SIMPLICITY COMPUTER	1- 1	1/4	0	0.0
O	TYMSHARE INC	7- 20	18 5/8	- 1/8	-0.6
A	URS SYSTEMS	2- 4	3 3/4	+1 1/8	+42.8
N	WYLY CORP	2- 4	3	0	0.0

PERIPHERALS & SU8SYSTEMS

EXCH		PRICE 1975 RANGE (1)	CLOSE JUL 1 1975	WEEK NET CHNGE	WEEK PCT CHNGE
N	AODRESSOGRAPH-MULT	4- 9	8 1/4	+ 1/2	+6.4
O	ADVANCEO MEMORY SYS	1- 7	7 1/8	+ 5/8	+9.6
N	AMPEX CORP	3- 7	6 1/8	0	0.0
O	ANOERSON JACO8SON	1- 3	2 1/2	0	0.0
O	8EEHIVE MEOICAL ELEC	1- 5	4 1/2	- 1/8	-2.7
A	8OLT,8ERANEK & NEW	5- 10	9 5/8	0	0.0
N	8UNKER-RAMO	4- 7	7 1/4	0	0.0
A	CALCOMP	4- 7	6 7/8	+ 1/4	+3.7
O	CAM8RIOGE MEMORIES	3- 5	4 3/8	+ 3/8	+9.3
N	CENTRONICS DATA COMP	7- 24	23 1/2	+3 1/2	+17.5
O	CODEX CORP	15- 38	32	-2	-5.8
O	COGNITRONICS	1- 2	1 3/4	+ 1/4	+16.6
O	COMPUTER COMMUN.	1- 2	1 5/8	+ 1/8	+8.3
O	COMPUTER CONSOLES	3- 7	5	0	0.0
A	COMPUTER EQUIPMENT	1- 2	1 1/2	- 1/4	-14.2
O	COMPUTER MACHINERY	1- 2	2 1/4	+ 1/2	+28.5
O	COMPUTER TRANSCEIVER	1- 2	1 3/8	0	0.0
O	COMTEN	2- 5	4 7/8	0	0.0
N	CONRAC CORP	12- 20	19	+1 1/8	+6.2
O	DATA ACCESS SYSTEMS	1- 3	2 1/8	0	0.0
O	DATA 100	5- 16	14 1/2	+1 1/2	+11.5
A	DATA PROOUCTS CORP	2- 6	5 3/4	+ 1/8	+2.2
O	DATA TECHNOLOGY	1- 3	1 3/4	+ 1/8	+7.6
O	OATUM INC	1- 2	1 1/8	+ 1/8	+12.5
O	OECISION OATA COMPUT	4- 7	6 3/8	0	0.0
O	DELTA DATA SYSTEMS	1- 1	1/4	0	0.0
O	OI/AN CONTROLS	1- 1	1 1/2	+ 1/8	+9.0
N	ELECTRONIC M & M	1- 3	2 1/4	+ 1/4	+12.5
O	EA8RI-TEK	1- 1	1 1/8	0	0.0
O	GENERAL COMPUTER SYS	1- 2	2 1/4	+ 1/4	+12.5
N	HAZELTINE CORP	3- 5	4 7/8	+ 7/8	+21.8
N	HARRIS CORP	18- 28	27 1/4	+ 7/8	+3.3
A	INCOTERM CORP	3- 11	9 7/8	- 1/8	-1.2
O	INFOREX INC	2- 5	4 1/4	+ 1/8	+3.0
O	INEORMATION INTL INC	8- 14	13 1/4	0	0.0
A	LUNDY ELECTRONICS	3- 3	2 7/8	0	0.0
O	MANAGEMENT ASSIST	1- 1	5/8	0	0.0
A	MILGO ELECTRONICS	8- 20	18 5/8	- 1/2	-2.6
N	MOHAWK OATA SCI	1- 5	3 3/8	- 1/8	-3.5
O	OPTICAL SCANNING	1- 3	3	0	0.0
O	PENRIL CORP	2- 2	1 7/8	0	0.0
O	PERTEC CORP	2- 8	6 3/8	0	0.0
A	POTTER INSTRUMENT	2- 2	1 3/4	0	0.0
O	PRECISION INST.	1- 1	1/4	0	0.0
O	QUANTOR CORP	2- 6	5 7/8	- 1/8	-2.0
O	RECOGNITION EQUIP	2- 9	7 7/8	-1 1/8	-12.5
N	SANDERS ASSOCIATES	3- 11	10	+ 1/8	+1.2
O	SCAN DATA	1- 3	2 1/4	+ 1/2	+28.5
O	STORAGE TECHNOLOGY	6- 15	14 3/4	+1 5/8	+12.3
O	SYCOR INC	5- 14	13 3/4	+ 1/4	+1.8
O	TALLY CORP.	1- 5	3 5/8	0	0.0
O	TEC INC	1- 3	2 3/4	0	0.0
N	TEKTRONIX INC	18- 39	39	+ 1/2	+1.2
N	TELEX	1- 3	2 7/8	+ 1/8	+4.5
O	WANGCO INC	4- 7	5 5/8	- 3/8	-6.2
O	WILTEK INC	1- 4	3	0	0.0

SUPPLIES & ACCESSORIES

EXCH		PRICE 1975 RANGE (1)	CLOSE JUL 1 1975	WEEK NET CHNGE	WEEK PCT CHNGE
O	8ALTIMORE 8US FORMS	4- 5	4 3/4	- 1/4	-5.0
A	8ARRY WRIGHT	5- 7	6 1/4	0	0.0
O	CY8ERMATICS INC	1- 1	3/4	0	0.0
A	DATA OOCUMENTS	29- 42	35	+1 1/4	+3.7
O	OUPLEX PROOUCTS INC	12- 25	22 1/4	+ 3/8	+1.7
N	ENNIS 8US. EORMS	5- 7	6	- 1/4	-4.0
O	GRAHAM MAGNETICS	5- 9	7	+ 1/4	+3.7
O	GRAPHIC CONTROLS	8- 21	14 5/8	-1 7/8	-11.3
N	3M COMPANY	43- 68	66 7/8	+ 7/8	+1.3
O	MOORE CORP LTO	39- 51	51 1/4	+1 3/4	+3.5
N	NASHUA CORP	15- 22	16 3/4	-1 1/8	-6.2
O	REYNOLOS & REYNOLO	11- 24	16	+1 1/2	+10.3
O	STANDARO REGISTER	11- 18	18	+ 3/4	+4.3
O	TA8 PRODUCTS CO	4- 8	6 1/2	0	0.0
N	UARCO	17- 24	22 1/4	- 3/8	-1.6
O	VANIER GRAPHICS CORP	4- 7	5 3/4	+ 1/4	+4.5
A	WA8ASH MAGNETICS	3- 5	4 3/8	- 3/8	-7.8
N	WALLACE 8US EORMS	15- 25	23	+ 1/4	+1.0

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